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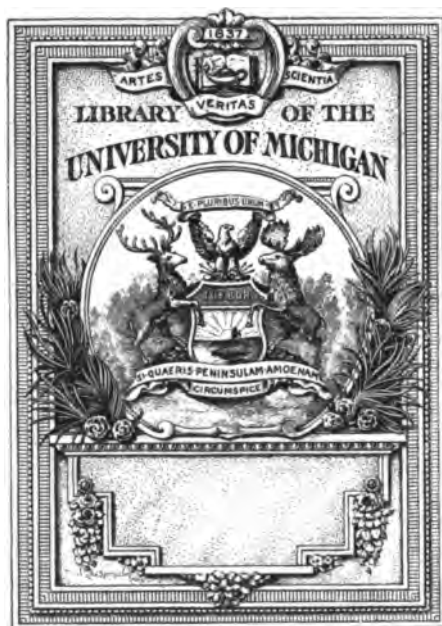
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REPORTS

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FROM THE

CONSULS OF THE UNITED STATES.

VOL. XIX.

APRIL-SEPTEMBER, 1886.



WASHINGTON:
GOVERNMENT PRINTING OFFICE.
1886.



UNITED STATES CONSULAR REPORTS.

REPORTS

FROM THE

CONSULS OF THE UNITED STATES

ON THE

COMMERCE, MANUFACTURES, ETC.,

OF THEIR

CONSULAR DISTRICTS.

No. 63.—April, 1886.

PUBLISHED BY THE DEPARTMENT OF STATE, ACCORDING TO ACT OF CONGRESS.



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ERRATUM.

Consul Hüning requests that the figures 41,845,679 metrical centners, printed on page 35, line 5, and in the second table on page 36, be changed to 40,825,552 metrical centners. In the same table the quantity of fresh beets used in Bohemia should be 26,178,845 metrical centners.

CONSULAR REPORTS
ON
COMMERCE, MANUFACTURES, ETC.

No. 63.—APRIL, 1886.

AUSTRIA-HUNGARY.

*REPORT OF CONSUL-GENERAL EDMUND JUSSEN ON COMMERCE, INDUSTRIES, ETC.
OF AUSTRIA-HUNGARY.*

**THE NUMEROUS HETEROGENEOUS ELEMENTS OF THE EMPIRE OF
AUSTRIA.**

In speaking of the inhabitants of the Empire of Austria, it is quite impossible to designate them as a nation. There is no national solidarity to be met with anywhere within the borders of the Empire, except the solidarity of the separate races, the conglomeration of which forms the people of the Austrian Empire.

There is not another political domain upon the face of Europe and Asia, Russia, perhaps, excepted, which unites under the same scepter so many different races, tribes, and nationalities, such numerous heterogeneous elements, divided and estranged from each other by habits, language, historical traditions, and political aspirations, as the domain which is confided to the paternal and imperial care of the house of Hapsburg.

The Empire of Austria, after experiencing many changes in the names and extent of territory since 1815, embraces to-day within its borders no less than seventeen different principalities.

The Empire is composed of:

- | | |
|---|-------------------------------|
| 1. The Archduchy of Austria below the Enns. | 9. Margraviate of Istria. |
| 2. The Archduchy of Austria above the Enns. | 10. Margraviate of Tyrol. |
| 3. Duchy of Salzburg. | 11. Dependency of Vorarlberg. |
| 4. Duchy of Styria. | 12. Kingdom of Bohemia. |
| 5. Duchy of Carinthia. | 13. Margraviate of Moravia. |
| 6. Duchy of Carniola. | 14. Duchy of Silesia. |
| 7. City of Trieste and its domain. | 15. Kingdom of Galicia. |
| 8. Margraviate of Görz and Gradisca. | 16. Kingdom of Dalmatia. |
| | 17. Duchy of Bukowina. |

Among all these kingdoms, duchies, margraviates, and principalities, but two are inhabited exclusively by one nationality, viz: Upper Aus-

tria and Salzburg, which are peopled by Germans; all the others are homes of different nationalities speaking radically different languages.

According to the last census of 1880 the Empire of Austria had a population of 21,794,231. Among these 22,000,000 of people prevails a marvelous mixture of languages; 36.75 per cent. of the population of the Empire speak the German language; 23.77 per cent. the Bohemian or Czechian language, when we include the Moravian and Slovakian languages, which are idioms derived from the same root; 14.86 speak the Polish language; 12.82 the Ruthenian language; 5.24 per cent. the Slavonian language; 3.06 the Italian language, and 2.58 per cent. the Servian and Croatian language; a small remnant in the Empire speaks the Hungarian and Roumanian language. No less than ten different languages within the limits of one empire peopled by about 22,000,000 of souls.

No doubt it requires the most extraordinary and superior statesmanship to form and maintain an undivided homogeneous nation out of these heterogeneous elements.

There is much loyalty to the Crown throughout the Empire, and no lack of enthusiasm for the reigning house of Hapsburg, but no truly national unity, no national pride and gratifying consciousness animates and elates these 22,000,000 of people that they are one and all-citizens of a great nation. They are not Austrians, pure and simple; in fact it is quite impossible to find outside of the Government and its numerous civil and military officers, and its representatives in Parliament, a single political party or faction whose members would style themselves Austrians. They all affirm their unwavering allegiance and fidelity to the Crown, but they insist that they themselves are either German-Austrians or Bohemians or Styrians, or Tyrolese, or Poles, or Italians, &c., anything but simply and solely Austrians.

What political inconveniences and disagreeable complications may arise to the Government of a country which must administer its affairs without the assistance of a national language common to all its subjects, and how seriously the development of trade and industry and the commercial as well as political progress of a people may be impeded by race hatreds and embittered rivalry between the several nationalities, may be easily surmised.

THE KINGDOM OF HUNGARY.

The Kingdom of Hungary is composed of: (1) The Kingdom of Hungary-Transylvania; (2) the Kingdom of Croatia-Slavonia; (3) the city of Fiume and its domain.

Its population, according to the census of 1880, was 15,739,375. This population is, like that of Austria, composed of numerous nationalities, among whom prevails a bewildering multiplicity of tongues. We may designate in round numbers the following different races and nationalities, each race preserving its own language with wonderful persistency and remarkable obstinacy:

Nationality or race.	Population.	Nationality or race.	Population.
Hungarians.....	6,500,000	Ruthenians.....	360,000
Roumanians.....	2,500,000	Slavonians.....	86,000
Croatians and Servians.....	2,333,000	Gypsies.....	82,000
Germans (almost).....	2,000,000	Others not classified.....	83,000
Slovakians.....	1,750,000		

Eight different languages and as many different races for the Kingdom of Hungary, and a mixture of 83,000 souls unclassified and undefined. Though Hungary is not disturbed by internal dissensions to the same extent as the Empire of Austria, the sympathy and fraternal feeling between the several races united under the crown of St. Stephan leaves much to be desired, and in certain localities there is no love lost between the Hungarian and German elements, nor between the Croats and Hungarians, and the debates in the local legislatures (Landtags) are frequently stormy and passionate to the last degree; race enmity, and rivalry being generally the principal and only cause of these parliamentary battles.

The dualism established between Austria and Hungary has doubtless realized the political aspirations of the Magyars as far as home rule is concerned, but it seems to have had little effect upon the harmony or rather disharmony between the several races inhabiting the Kingdom; they seem to be united only in the unquestionable spirit of loyalty to His Apostolic Majesty the King of Hungary and Emperor of Austria.

THE WAR BETWEEN THE GERMAN AND BOHEMIAN RACES IN AUSTRIA.

The irrepressible parliamentary conflict between the slavery and anti-slavery parties was not waged with more acrimony and determination than the political strife now in full progress between the German and Bohemian subjects of the Austrian Empire. There is not a political move on the European chessboard which to the participants in this internal warfare seems of any importance whatever in comparison with the great and overwhelming question whether the German-Austrians or the Czechian-Austrians shall obtain predominance in the Empire. This race question has ceased to be of local importance only; it has overleaped the borders of the small Kingdom of Bohemia, and has entered the Diet of the Empire and the ranks of the army as well as the public schools.

On the occasion of the debate in the last session of the Reichstag on the opening address of the Crown the advocates of German and Czechian aspirations, respectively, gave full and unrestrained expression to the deep hatred and contempt which these elements bear each other, and which, as is claimed by the opposition, has grown to uncontrollable proportions since the present prime minister has assumed the guidance of the internal affairs of State, albeit his official programme contained the promise of a complete pacification of these warring factions, and of speedy and perfect peace, harmony, and good will, as between all the races within the borders of the Empire.

The German-Austrian party presented its interpellation in the Diet with reference to the numerous and brutal excesses committed by the Czechs in Bohemia on the German citizens of that Kingdom, and the strife began. The discussion was stormy and passionate beyond all measure, and, to the impartial observer, presented, as its most characteristic feature, the remarkable fact that the real motive which animated the majority of speakers was mainly the ascendancy and political power of the respective nationalities which they represented; and at the end of the session the hatred was more bitter than ever, and the hope of internal peace and harmony seemed further from its realization than when the session begun.

But not only is the Diet (Reichsrath) the scene and battle-ground of these contending factions, the race hatred, as was asserted again and again upon the floor of the Reichsrath, has even entered the army and the public schools.

INCREASE OF POPULATION AND EMIGRATION.

Although statisticians admit that the Empire lost over 100,000 of its subjects by emigration (principally to the United States from Bohemia) in a period of twenty-five years, which estimate is much below the true figures, they claim that immigration and the natural increase have been sufficient, not only to counterbalance this loss, but that an increase of population at the ratio of 0.81 to 0.91 per cent. per annum had taken place in Austria.

As regards Hungary it is claimed that the annual increase is fully 1 per cent.

It cannot be said that the Governments of Austria-Hungary discourage emigration to the United States as systematically and to the same extent as other European Governments. True, there seems to be as little sympathy with the American nation and as deep-seated a dread of its rapid progress upon the fields of industry and commerce, and probably as poor an opinion of our achievements in arts and sciences and of American civilization generally, as anywhere else, where the ruling powers find it expedient to disbelieve the final success and permanent stability of our institutions, but this dislike and contempt rarely, if ever, finds expression in unmistakable terms. The public press simply ignores the United States, and the consequent ignorance of the majority of the people as regards the American Republic, its history, institutions, resources, and progress, as well as leading political events, is quite remarkable. One would suppose that our civil war had made noise enough in the world to inform most people of the downfall of the Confederacy, and it is somewhat surprising, therefore, when Confederate bills are again and again presented at this consulate-general for exchange into current Austrian funds.

In the public press of Austria one will look in vain for important news from the United States, unless it is some brief account of the action of our Government of direct interest to the Government of this Empire. But if there has been an atrocious murder committed anywhere within the Republic, or if a great conflagration has destroyed a large amount of property or a cyclone has struck a village in the far West, or the Apaches have attacked a settlement on the frontier, or a strike of laborers has taken place in some city of the Union, the Austrian press will publish the news with all its horrifying details, and the frightened reader is supposed to abandon at once and forever all intentions of emigrating to the United States for the purpose of bettering his fortune. This sort of discouragement of emigration is carried on systematically, and doubtless with telling effect.

THE CONDITION OF THE LABORING CLASSES.

The condition of the laboring classes in this Empire, as a whole, cannot well be termed very satisfactory, and their present lot and prospects for the future cannot be considered enviable, even from a European stand-point. The state of society here, as else wherein Europe, shows but too clearly that the reward of labor is divided in the reverse proportion to the amount of labor actually performed, that the greatest portion of this reward is reaped by those who never labored at all, and that the most trying and exhausting manual labor cannot always rely with certainty even upon the most indispensable necessities of life as a recompense for unremitting toil.

The remedies proposed for palliating this social evil are many, and of various character; a radical cure no one believes within the reach of possibility. The latest theory of palliation was advanced quite recently by an imperial royal civil officer, a prominent jurist and member of the ministry of justice, who, in a public address, cited all the authorities, ancient and modern, from the Bible down to John Stuart Mill, in order to prove that the wealthy have not only the "rights" of possession, but that wealth also has its "duties" to perform, and from these premises he draws the remarkable deduction that above all the merchants and speculators, who amass their riches with such great rapidity, had special duties toward society, and should by liberal donations alleviate the suffering of the poor. As to the duties of the landed aristocracy and of inherited wealth the learned speaker was silent, but the liberal press of Vienna reminded him quite forcibly of the omission, and deplored the fact that the views in question were advanced by so prominent a member of the Government, and predicted evil days for the state if these principles were to be embodied in future legislation.

One of the measures which was inaugurated by the Government during the year 1885 for the purpose of reducing overproduction and thus indirectly benefiting the laborer, by raising the price of manufactures and consequently also the wages paid to factory laborers, was the passage of a law limiting a day's labor to eleven hours for adults and eight hours for minors, prohibiting all labor on Sundays and holidays and all night labor by minors between 8 p. m. and 5 a. m., as well as all business and trade after 12 m. on Sundays and holidays, excepting only the sale of wine, beer, coffee, &c., and of cigars and tobacco. But the protests against this measure have been loud and deep by several classes of laborers, and many trades have petitioned the ministry of commerce for exception and dispensation from this enactment.

The statistics published during the year 1885 with reference to the condition of the laboring classes of Austria are full and complete, and bear witness to a systematic, thorough, and exhaustive examination of the question. These statistical reports are the results of the labor of nine trade inspectors who were appointed under a law passed in June, 1883. The Empire was divided into nine districts and a separate report was made for each district. Twenty-five hundred and sixty-four factories, employing 227,930 laborers, were examined. The examination extended to the sanitary condition of the factory rooms, their ventilation, light, and temperature, accidents in factories and measures for their prevention, hours of labor and length of recess, factory rules and regulations, time and terms of payment of wages, dwellings of laborers, general condition of laborers and their families, insurance against accidents, amounts of wages paid, and price of food and fuel in the respective localities.

[Extract from report of first district which consists exclusively of the city of Vienna.]

The factories examined in this district manufacture metal wares; machinery, tools and instruments; stoneware, terracotta, and glassware; wooden-ware, bone, and gutta percha ware; textile goods; clothing and millinery goods; paper and leather goods.

SANITARY CONDITION OF THE FACTORIES.

The inspector reports in substance:

The factories built in Vienna within the last ten or fifteen years answer their purpose well in every respect, but the small factories and workshops of an older date, with few exceptions, are built without regard to sanitary conditions.

The main objections are a foul atmosphere, insufficient light, and lack of room. The workshops of these small factories are partly ordinary dwelling-rooms, and partly they are situated in basements.

I found the worst conditions in the metal foundries, many of which are established in cellars.

In the shops of the galvanizers who work in dark rooms and kitchens, the atmosphere is impregnated with saltpeter and sulphuric acid to a degree which irritated my eyes and throat. The young girls who worked there all coughed and had inflamed eyes. The foul atmosphere is often caused by the overcrowding of the shops to save additional rent.

Of three match factories in Vienna, two had no ventilation at all, and in the third the apparatus for ventilation was out of order and useless.

In a horn-button factory of Vienna, the steam was so dense that one could not see for a distance of 3 paces. The ventilators were rusty and out of use.

In most of the soap factories there was no ventilation.

In a shoe factory, the boot soles were soaked in a mixture of pitch and tar, contained in an open vessel. The stench was dense and intense.

In the colored-paper factories it was quite uncomfortable. Atmosphere foul and oppressive.

The grinding rooms of the metal-ware factories had an atmosphere saturated with dust and no ventilation.

The most unsatisfactory condition was found in the grinding room of an alpaca factory. Twenty-five grinders, mostly girls in a room 6 meters long, 3 meters wide, and 6 meters high, covered with grinding dust.

The book-printing establishments mostly lack the light of day. Many of them burn gas all day, and have no ventilation.

In most of the type-foundries was found a temperature of from 22° to 25° R.

In seventy-two establishments were found a foul atmosphere and no arrangements whatever for ventilation.

In the small factories and in many large ones the conveniences for washing are insufficient.

In the match factories no wash-stand was to be seen, and in most of the iron and metal foundries, where they are needed most, no washstands were provided.

In a large lock manufactory sixty-five young workmen are employed, forty-five of whom board and lodge in the building. Neither in the dwelling-rooms nor in the work-rooms is a single wash-basin to be found. Most of the boys had a crust of dirt on hands and face.

A few of the larger older factories and most of the new factories have provided every requisite in a hygienic direction and have plenty of air and light.

In only four factories was the electric light in use; the balance use gas and petroleum.

Hours of labor previous to the passage of the act of March 8, 1885.

In the small shops, generally a day's labor is eleven hours; in the larger factories, ten hours.

In the small shops no regularity is observed as to the hours of daily labor. According to the demands of the market the workmen labor sometimes for weeks ten and eleven hours per day, and then again from fourteen to fifteen hours per day.

Most factories which produce the so-called season articles work from one to three hours longer at certain periods than the usual time. It is asserted that the law of March 8, 1885, has not caused a general reduction of a day's labor to eleven hours, as numerous exceptions and dispensations from this strict rule are provided by the terms of the law itself.

WAGES.

In general, the men work by the job, the women on time wages. On an average a week's wages for a man is about 8½ florins per week, for a female laborer about 5 florins per week. The margin between minimum and maximum wages is very large, especially with men. The lowest limit with the latter is 5 florins per week, and the highest 25 florins, while with the women the wages range from 3 florins to 9 florins per week.

The average wages of the men is highest in the machine industry, viz, 11½ florins per week, and lowest in the textile industry, viz, 6½ florins per week.

Laborers by the job earn on an average from 20 to 50 per cent. more than those employed on fixed wages.

Payment of wages is made weekly; mostly on Saturday evenings; only in three factories payment is made on Friday, for the following reasons: (1) Because the laborer is not so apt to visit the beer and wine saloon on Friday evening, as he must be in the factory early on the following day. (2) His wife can make the necessary purchases on Saturday. (3) Experience shows that there are less "blue Mondays" when payment is made on Friday.

THE PRICE OF FOOD IN VIENNA.

The inspector of this district omitted to give the price of provisions. I can, however, state with absolute certainty that Vienna is the most expensive city as regards the cost of living upon the continent of Europe. It has that reputation, and the reputation is in accordance with the facts.

Everything, all the necessities of life, clothing excepted, are quite as dear here as in the larger cities of the United States. Some articles are much higher in price; for instance, ham and petroleum have thrice the price for which they are sold in the United States.

Bric-a-brac, Viennese specialties, oil paintings, fans, bronze jewelry, painted porcelain, &c., all articles of luxury, are far cheaper in Vienna than in many other markets; but the poor man has no need for them; they educate his artistic taste, but cheap food and cheap light would be of more lasting benefit.

The volume of this report would exceed the usual and proper dimensions if I should embrace in it as copious extracts with reference to the condition of factories and workshops from the reports of the remaining eight districts as I have made from the report of the first district. I presume it will be considered sufficient for all practical purposes if I state the fact that the several reports of the eight remaining inspectors correspond on the whole with that of the inspector of the first district as to the sanitary condition of the factories and workshops throughout the Empire. All the inspectors agree that in most of the new factories built within the last decade ample provision has been made for the health and comfort of the laborer, but that in the old factories and workshops, especially in the smaller shops and factories (*Kleingewerbe*), there is a total want of hygienic precautions, and that foul air, excessive heat, dust, and a total absence of ventilation interfere seriously with the health and comfort of the laborer.

It appears from the inspectors' reports that energetic measures were taken by all of them to abolish as much as possible these objectionable features, and to improve the sanitary conditions of the factories under their supervision.

There can be no doubt that by the enactment of the law of June, 1883, hereinbefore referred to, and by its energetic enforcement, the Government of Austria has made an earnest and praiseworthy effort to better the condition of the working classes to an appreciable degree.

Many instances are cited in these reports, showing the practical benefit to factory laborers arising from the improvements and changes ordered by the inspectors.

WAGES AND PRICES OF PROVISIONS IN THE EIGHT REMAINING DISTRICTS.

In addition to the information hereinbefore furnished, with reference to laborers' wages in the district of Vienna, I submit herewith a concise statement of wages paid and of prices of provisions in the other eight industrial districts:

Wages in the second district, comprising Lower Austria (with the exception of Vienna) and the Duchy of Salzburg.

The inspector omitted to embody a statement of wages paid in this district in his report. He mentions only the wages paid to apprentices, viz, in the small shops board and lodging and 15 to 20 kreutzers per week in exceptional cases, when extraordinary diligence is displayed.

In larger factories, in machine factories, 50 kreutzers up to 1 florin per day.

In textile factories, from 15 to 45 kreutzers per day.

Wages and prices of provisions in the third district comprising Pilsen, Tabor, and other cities in Bohemia.

WAGES PER DAY.

Workmen.	Highest.	Lowest.	Average.
	<i>Florins.</i>	<i>Florins.</i>	<i>Florins.</i>
Journeymen	.85	1.23	1.04
Day laborers	.38	.95	.59
Female laborers	.30	.56	.44
Minors	.22	.49	.34
<i>In the small factories and workshops.</i>			
Journeymen, with board	.20	.50	.31
Journeymen, without board	.48	1.43	.83
Minors, without board	.25	.30	.27
Day laborer			.40
Female laborer			.40

PRICES OF PROVISIONS.

[1 kilogram, 2½ pounds, English.]

Articles.	Price.	Articles.	Price.
	<i>Florins.</i>		<i>Florins.</i>
Flour..... per kilogram	.168	Eggs..... per piece.....	.028
Peas..... do.....	.14	Common beer..... per quart.....	.115
Lentils..... do.....	.207	Coffee..... per ½ kilogram.....	.185
Black rye bread..... do.....	.115	Sugar..... per kilogram.....	.40
Potatoes..... do.....	.025	Petroleum..... do.....	.28
Beef, very medium..... do.....	.55	Hard coal..... per metric centner.....	1.20
Fresh butter..... do.....	1.05	Turf..... do.....	.74
Best butter..... do.....	1.32	Rice..... per kilogram.....	.21
Lard..... do.....	.90		

Daily wages and price of provisions in the fourth district, comprising Prague and other cities of Bohemia.

Occupations.	Wages.	Occupations.	Wages.
	<i>Florins.</i>		<i>Florins.</i>
In coppersmith and metal-ware factories:		Garnet-finishing factories:	
Coppersmiths.....	1.50	Goldsmiths.....	2.66
Metal-turners.....	1.67	Grinder.....	1.25
Machine-smiths.....	1.50	Girls.....	.62
Iron-turners.....	2.42	Apprentices.....	.42
Smiths.....	1.42	Machine, tool, and instrument factories:	
Cabinetmakers.....	1.50	Mechanics.....	1.33 to 2.66
Apprentices.....	.34	Day laborers.....	1.00
Rolling-mills of Töplitz:		Apprentices.....	.25 to .50
Locksmiths.....	2.14	Porcelain factories:	
Smelters.....	2.86	Male laborers.....	1.25 to 1.98
Eisenführer.....	2.28	Machine turners.....	2.32
Belt-grasper.....	2	Female laborers.....	.58 to 1.00
Boiler-tender.....	2.28	Apprentices.....	.45 to .75
Fireman.....	2	Day laborers.....	.66
Laborers.....	.94 to 2.42	Glass factories:	
Other rolling-mills:		Male laborers.....	1.15 to 2.30
Fuddler.....	2.50	Female laborers.....	.60
Hammersmith.....	2	Day laborers.....	1.00
Assistant hammersmith.....	1.80	Masons.....	1.35
Forger.....	2.90	Brick kilns:	
Locksmith.....	1.50	Male laborers.....	1.36 to 1.58
Fireman.....	1	Female laborers.....	.50
Apprentice.....	.80	Day laborers.....	.85
Day laborer.....	.50	Woodenware, bone, and gutta-percha factories:	
Gold-ware factories:		Male laborers.....	1.25 to 1.66
Goldsmith.....	2.10	Grinders.....	2.00
Assistant.....	.90	Female laborers.....	.66
Engraver.....	1.25	Girls.....	.34
Apprentice.....	.27	Apprentices.....	.60
Female laborer.....	.66	Day laborers.....	.85
Girls.....	.27		

Daily wages and price of provisions in the fourth district, &c.—Continued.

Occupations.	Wages.	Occupations.	Wages.
	<i>Florins.</i>		<i>Florins.</i>
Leatherware, feather, and hair-goods factories:		Wall-paper factories:	
Male laborers.....	1.40	Printers.....	2.08
Female laborers.....	.50	Painters.....	3.00
Apprentices.....	.50	Other male laborers.....	1.41 to 1.75
Day laborers.....	1.00	Other female laborers.....	.75
Textile goods factories:		Apprentices.....	.50
Cotton spinners.....	1.45	Day laborers.....	1.00
Female spinners.....	.90	Distilleries:	
Female day laborers.....	.55	Malsters.....	1.25
Smiths.....	1.41	Assistants.....	1.10
Machine tenders.....	1.66	Firemen.....	1.33
Firemen.....	1.33	Head-workmen.....	1.67
Grinders.....	1.33	Masons.....	1.50
Boys.....	.42	Yard laborers.....	1.00
Girls.....	.35	Breweries:	
Weaving establishments:		Brewers.....	2.00
Weavers.....	1.50	Assistants.....	1.40
Shearers.....	1.66	Coopers.....	1.10
Machine tenders.....	2.00	Machinists.....	2.10
Balance of male laborers.....	1.00 to 1.66	Firemen.....	1.10
Female laborers.....	.80	Steam mills:	
Boys.....	.55	First millers.....	2.59
Girls.....	.32	Second millers.....	1.67
Millinery and clothing factories:		Stone-dressers.....	1.21
Hat-makers.....	1.33	Millers' assistants.....	.91
Female hat-makers.....	.66	Other male laborers.....	.84 to 1.00
Firemen.....	1.33	Sugar refineries:	
Machinists.....	1.50	Male laborers.....	.75 to 1.50
Day laborers.....	.60	Female laborers.....	.50
Starchers, female.....	.66	Girls.....	.48
Starchers, male.....	1.00	Day laborers.....	.65
Cutters.....	1.38	Chemical factories:	
Washerwomen.....	1.00	Male laborers.....	1.00 to 1.30
White goods sewers.....	.58	Female laborers.....	.54 to .80
Ironers.....	1.08	Minors over fourteen years.....	.50 to .85
Paper factories:			
Male laborers.....	1.16 to 2.00		

No prices of provisions reported by the inspector of this district.

Daily wages in the fifth district, comprising Reichenberg and other cities in Bohemia.

Occupations.	Wages.	Occupations.	Wages.
	<i>Florins.</i>		<i>Florins.</i>
Cotton-spinning establishments:		Foundries.....	.80 to 1.80
Male laborers.....	.50 to .90	Dye works:	
Yarn packers.....	.80 to 1.00	Male laborers.....	.80 to 1.00
Spinners.....	.70 to 1.10	Flax and hemp spinneries:	
Saw-mills:		Male laborers.....	.43 to 1.20
Male laborers.....	.70 to 1.20	Female reelers.....	.70 to .80
Printing establishments:		Furniture factories.....	.60 to 1.20
Female laborers.....	.60 to .80	Wool spinneries:	
Male laborers.....	.75 to .90	Male laborers.....	.45 to 1.10
Gas works:			
Male laborers.....	.80 to 1.00		

No report as to prices of provisions in this district.

Daily wages in the sixth district comprising Moravia and Silesia (Brünn).

Occupations.	Wages.	Occupations.	Wages.
Slate quarries:	<i>Florins.</i>	Clothing factories:	<i>Florins.</i>
Male laborers	.50 to 1.00	Male laborers	.60 to 1.20
Female laborers	.30 to .40	Female laborers	.20 to .83
Minors	.30	Minors	.20 to .40
Smelting works:		Paper factories:	
Male laborers	1.00 to 2.50	Male laborers	.83 to 1.50
Minors	.10 to .50	Female laborers	.25 to .50
Machine works and wagon factories:		Minors	.20 to .40
Male laborers	1.00 to 1.50	Sugar refineries:	
Minors	.10 to .35	Male laborers	1.00 to 1.50
Glass factories:		Female laborers	.33 to .98
Male laborers	.60 to 1.60	Minors	.25 to .43
Female laborers	.40 to .50	Chemical factories and gas works:	
Wood and bone ware factories:		Male laborers	.50 to 1.85
Male laborers	.65 to 1.50	Female laborers	.47 to .53
Female laborers	.25 to .50	Minors	.30 to .40
Minors	.20 to .30	Book publishing establishments:	
Tanneries:		Male laborers	1.00 to 1.50
Male laborers	.83 to 2.40	Female laborers	.37 to .75
Female laborers	.33 to .43	Minors	.10 to .87
Minors	.15 to .20	Firemen, machine-tenders, and	
Cotton spinning and weaving establishments:		night watchmen	.70 to 1.65
Male laborers	.70 to 1.30	Day laborers	.60 to .80
Female laborers	.20 to .68	Female laborers	.40 to .67
Minors	.15 to .22	Minors	.32 to .50

Daily wages paid for job work in the sixth district comprising Moravia and Silesia (Brünn).

Occupations.	Wages.	Occupations.	Wages.
Slate quarries:	<i>Florins.</i>	Wood and bone ware factories—	
Male laborers	.50 to 1.17	Continued:	<i>Florins.</i>
Female laborers	.33 to .50	Minors	.20 to .38
Smelting works:		Cotton spinning and weaving establishments:	
Male laborers	1.50 to 3.35	Male laborers	1.18 to 3.00
Machine works and wagon factories:		Female laborers	.50 to 1.13
Male laborers	1.35 to 5.00	Minors	.17 to .50
Glass factories:		Clothing factories:	
Male laborers	.66 to 3.65	Male laborers	.88 to 1.82
Female laborers	.50 to 1.00	Book publishers:	
Minors	.20 to .33	Male laborers	1.00 to 3.50
Wood and bone-ware factories:		Female laborers	.50 to .75
Male laborers	.66 to 2.32		
Female laborers	.33 to .83		

No report of price of provisions in this district.

Seventh district.

The rate of wages and price of provisions in the seventh district comprising Galicia and Bukowina is not reported.

Daily wages and price of provisions in the eighth district comprising Tirol, Voralberg, and Carinthia.

Occupations.	Wages.	Occupations.	Wages.
Iron and steel rolling mills:	<i>Florins.</i>	Paper factories—Continued:	<i>Florins.</i>
Skilled laborers	1.33 to 2.30	Minors of both sexes	.55
Common laborers	.75 to .90	White lead factories:*	
Packing-paper factories (mostly job work):		Male laborers	.85 to .95
Male laborers	.90	Female laborers	.55
Female laborers	.60	Textile factories, spinning and weaving establishments:†	
Paper factories:		Male laborers	.75 to 1.00
Male laborers	.85 to 1.40	Female laborers	.40 to .65
Female laborers	.42 to .67	Dyers and pressers	1.00 to 1.33

* All laborers are furnished with breakfast, free quarters, fuel, and light.
† Free quarters and fuel gratis.

Daily wages and price of provisions in the eighth district, f.d.—Continued.

PRICES OF PROVISIONS.

Articles.	Price.	Articles.	Price.
	<i>Florins.</i>		<i>Florins.</i>
Beef.....per kilogram.....	.54 to .56	Rye bread.....per kilogram.....	.14 to .15
Fresh pork.....do.....	.58 to .60	Beer.....per quart.....	.12 to .16
Salt pork.....do.....	.68	Wine, ordinary.....do.....	.16 to .32
Lard.....do.....	.75	Spirits (whisky).....do.....	.44 to .50
Wheat flour, No. 1.....do.....	.17 to .20	Potatoes.....per kilogram.....	.02 5
Wheat flour, No. 2.....do.....	.13 to .18	Cider.....per quart.....	.12
Rye flour.....do.....	.12½ to .14	Beans.....per kilogram.....	.14 to .18
Corn meal.....do.....	.10 to .12	Milk.....per quart.....	.08 to .09
Buckwheat flour.....do.....	.15 to .19		

Wages (daily, weekly, and monthly) and prices of provisions in the ninth district, comprising Styria, Trieste and its domain, and Dalmatia.

Occupations.	Wages.	Occupations.	Wages.
	<i>Florins.</i>		<i>Florins.</i>
Iron and steel works (daily wages):		Tanneries—Continued:	
Male laborers.....	1.25 to 2.90	Machinist.....	8.50
Druckers.....	3.25	Cabinet-makers, carpenters, and	
Assistants.....	1.00	locksmiths (daily wages):	
Carpenters.....	1.40	Cabinet-makers.....	1.00 to 1.40
Masons.....	1.15	Carpenters.....	1.00 to 1.20
Male day laborers.....	.80 to .90	Machinists.....	1.10
Female day laborers.....	.50 to .60	Firemen.....	1.00
Copper and metal ware factories		Assistants.....	.90 to 1.00
(daily wages):		Locksmiths.....	
Male laborers.....	.70 to 1.20	Smiths.....	
Wire nails and wire factories		Tool-makers.....	.83 to 3.00
(weekly wages):		Turners.....	
Wire-pullers.....	7.00 to 11.00	Shoe factories (weekly wages):	
Other male laborers.....	6.00 to 6.60	Journemen.....	5.00 to 8.50
Female laborers.....	4.00 to 4.50	Hat factories (weekly wages):	
Screw factories (weekly wages):		Journemen.....	9.50 to 15.00
Smiths and locksmiths.....	10.00 to 11.00	Bakeries (monthly wages):	
Other male laborers.....	8.00 to 9.00	Bakers*.....	14.00 to 50.00
Female laborers.....	4.00 to 4.50	Grain mills (daily wages):	
Machine factories (daily wages):		Millers*.....	1.10 to 1.50
Former.....	1.40 to 3.50	Printing establishments (weekly	
Other skilled laborers.....	1.10 to 2.20	wages):	
Day laborers.....	.90 to 1.00	Type-setters.....	10.00 to 20.00
Tanneries (weekly wages):		Printers.....	12.00 to 15.00
Tanners.....	10.00 to 14.00	Machinists.....	12.00 to 18.00
Cutters.....	12.00 to 18.00	Females.....	3.00 to 5.00

No report of prices of provisions in this district.

* Free board and lodging.

THE HOMES OF THE LABORERS.

With reference to the sanitary condition of the homes and private dwellings of laborers the inspectors mention a few isolated cases in which the proprietors of the factories, notably those at Reichenberg in Bohemia, have built comfortable and cheap homes for their laborers, and state that a few of them have even incurred the expense to furnish these comfortable homes to the laborers free of charge, but all the inspectors agree that in most cases, where the laborers lived in hired apartments, they are overcharged, their rent amounting generally to fully one third of their earnings, and that their dwelling places in many instances are not fit for a human being (*nicht menschenwürdig*). For example, the inspector of the third district reports:

In a flour mill connected with a bakery, two bakers slept on the bake-oven. The air entered through a hole one-half meter in diameter, through which these bakers had to crawl to reach their couch.

In a glass-grinding establishment I found that the head workman and his family, together with his journeymen and female servants, all slept in one room—from eight to twelve persons in all. They generally had only three straw ticks to sleep on, but as a recompense for all this discomfort it is stated that after ten years' service these head workmen are relieved from all payments of rent.

The inspector of the fifth district reports that of the 42,000 laborers who are employed in the factories which he examined in 1884, hardly one-third lived in homes provided by the proprietor of the factory. This one-third is well taken care of, especially in the dwellings provided by the firms of Liebig, in Reichenberg; Leitenberger, in Kosmanus; and Haase, in Trautenau. The rent paid for these homes amounts to one-quarter to one-sixth of the laborers' earnings. The firm of Mauthner and Oesterreicher, in Grünwald, furnishes its laborers with good homes free of charge, and certainly deserves the especial mention with which the inspector has honored it.

But (says the inspector) the laborers dwelling in hired apartments not furnished by the factories are burdened with a rent amounting to much more than one-third of their wages, and dwell in quarters totally unfit for a human being.

In a garret of a small house, 12 paces long and 8 paces wide, dwell thirteen laborers, girls and men. An old man had his quarters in a remote corner, among the rubbish, for which he paid 1.20 florins per week.

In another industrial district I found terrible conditions in these hired quarters. In damp, unhealthy rooms human beings, old and young and of both sexes, were crowded together; and the inspector points to the physical and moral consequences arising from this condition, and says that this picture is more or less true of all the industrial districts under his supervision.

The inspector of the sixth district, comprising Moravia and Silesia, with the city of Brünn, where large textile factories are situated, enters the same complaint. He says:

In the cities the dwellings of laborers are insufficient in number, and the laborers are compelled to sleep in the factories. This is particularly the case in Brünn, and a speedy improvement in this regard is unquestionably necessary. Among the large cities of Europe Brünn is one of those that shows the greatest mortality.

The inspector of the seventh district reports:

The dwelling-rooms of the laborers are generally very poor. Many laborers live in the factories, especially when the factories are at some distance from their homes. Generally the laborer and his family occupy but one room, which is also used as a kitchen; very often other parties occupy this one room with the laborer and his family. Quarters with separate kitchens are to be found only in very rare instances, and only then when laborers are particularly skillful and earn extraordinary wages. I know of but seven factory proprietors who furnish their laborers with dwelling room.

THE NAILSMITHS IN (KRAIN) CARINTHIA.

A most touching account of the miseries of the nailsmiths of Carinthia is appended to the reports of the imperial royal inspectors. The main facts are in substance these: In Kropp, Carinthia, are 320 smiths, with 125 women and children, who together work at this trade. In Steinbüchel, 43 to 50 smiths, with 190 women and children. The nails are made by hand. Men, women, and children of both sexes, from eight years upward, are at work at the anvil. The smith works hard, fourteen hours in the day. His toil commences at 3 o'clock in the morning, sometimes even earlier. His first recess of one hour is at 8 o'clock in the morning, when he takes his breakfast; then he works again until 1 p. m., when he rests for an hour and takes his dinner. From 2 o'clock until 7 p. m. again uninterrupted toil. Children from eight to ten years work three hours, from ten to twelve years six hours, those from twelve to fourteen years nine hours. Wednesdays and Saturdays work ceases at 1 p. m., and the men go to the woods to gather firewood, and the wives and daughters wash, bake bread, and attend to household duties.

The total earnings of a nailsmith at Steinbüchel amount to from 2 to 4 florins per week; at Kropp, from 3 to 5 florins per week. He re-

ceives 1.65 florins for 1,000 nails, from which, however, the cost of the raw material furnished by the buyer is deducted. The charcoal the smiths must furnish themselves. The dwelling-houses are very poor, rooms damp, floors rotten, and the wooden walls offer little protection against wind and weather. His meals are miserable. He eats three meals a day, but what food is it that is placed upon his table—a flough made of flour and water swimming in grease (sterz), meat only on holidays. There were many years when hunger knocked on many a door, when many fires were extinguished, and wages were even lower than they are to day.

The buyer, who furnishes the raw material for the nails, cheats the poor smith at every turn. He compels him to buy his provisions from him at exorbitant prices, and it is a rare occasion, indeed, that for all his labor the smith takes home any money at all after settling with his employer.

Epidemics among these people are frequent. Dysentery appears almost every year. The cholera came twice within thirty years, once so violent that people died like flies in winter. The nailsmiths do not reach a very old age; the average runs from forty to fifty years. They succumb to the diseases of their trade, consumption and heart disease. Women rarely live to forty years of age. The mortality among children is very great; most of them die in consequence of hard labor. It rarely happens that a young smith is found fit for military service.

LOTTERIES.

The institution of lotteries may be considered in direct connection with the condition of the laboring classes of this Empire.

There can be no question that the gambling propensity of the poor man, his vain hope for the rapid acquirement of wealth, are directly encouraged by the chances which are offered him by the Government to invest the small surplus of his earnings in a lottery, which is under the management and superintendence of the authorities. Instead of saving his small pittance and gradually acquiring a little capital with which he might better his condition and enhance his chances for success, he hopes for the sudden revulsion of his fortunes, and carries his few kreutzers or florins to the lottery shops only to be disappointed again and again. This passion for gambling has taken a deep hold on the laboring classes, and on certain days the shops of the collectors are crowded with men and women, old and young, the women with market baskets on their backs, the men often with tools in their hands, all intent to get rid of their savings in exchange for the lucky numbers.

This so-called lotto, or "number lottery," seems to be arranged for the very purpose of enabling the laborer to "try his luck." The lowest stake which is accepted is so ridiculously low that a beggar may safely patronize a lottery shop every day of his life. It is 5 kreutzers, or 2 cents. The chances for winnings are arranged in a very tempting manner. The stakeholder "may" win either 14 times or 67 times or 240 times or 4,800 times the amount of his stake, and as the drawings take place almost every day the excitement is incessant and hope never dies. In the mean time, however, every kreutzer is sacrificed to this ever-growing passion, and at last, when all available means are exhausted, the pawn shops are resorted to to furnish the funds for another venture. If statistics were published as to the direct consequences of this lottery institution, giving us the exact figures with reference to the crimes and the suicides following in the wake of this popular gambling, they would,

I think, tell a terrible and revolting story. Not a session of the Reichstag passes but some true friend of the people insists that at last the Government shall abandon this source of revenue, but as yet the minister of finance has always answered that, however desirable he may deem the abolishment of the "number lottery" from a moral as well as an humane standpoint, the item cannot as yet be spared from the budget of the Empire.

There are no less than 1,070 offices for the collection of stakes and sale of lottery tickets in the Empire. The drawings take place in 17 different cities.

The following table shows the amount risked in this game of chance by the laboring classes of Austria, the profit realized by the Government, as well as the amount of winnings paid to the stakeholders. When we take into consideration that most of the stakes taken are small, the majority below one florin, we can estimate what an immense number of people invest their small earnings. It seems almost as if half the nation played in the lottery.

Year.	Total receipts.	Expenses.	Winnings.	Profit of Government.
	<i>Florins.</i>	<i>Florins.</i>	<i>Florins.</i>	<i>Florins.</i>
1882.....	20, 071, 409	1, 014, 172	10, 775, 636	8, 281, 601
1883.....	21, 813, 923	1, 072, 083	13, 276, 963	7, 464, 877
1884.....	22, 153, 116	1, 069, 100	11, 777, 276	9, 306, 290

I have been unable to obtain the figures for 1885, but it seems from the foregoing table that the investments are on the increase.

THE PAWN-SHOPS.

These shops follow in logical sequence immediately after the lottery shops. The law governing the business of these establishments is very strict and well considered, and the police supervision over all transactions in this line is most incessant and complete. I think there is little chance for the abuse of the privileges granted under the law.

The only statistics referring to pawn shops which I have been able to obtain relate to the city of Vienna exclusively, and close with the year 1884. They were published in January, 1886. One institution transacts all the pawn business in the city; it carries on three separate establishments. During the year 1884 this institution loaned on pledges the sum of 17,673,508 florins. The loans made on pledges remaining due and unpaid on the 31st of December, 1884, amounted to 6,162,096 florins.

AGRICULTURE.

It would be a work of supererogation to include in this report a voluminous statement of the extent of the area of Austria-Hungary and of its division for the several purposes of agriculture, as the statement was furnished in tabular form in accordance with official statistics by my predecessor in his last annual report. It would be the more superfluous to repeat this statement, because Austria as well as Hungary undergoes little change in the area of soil subjected to tillage in the course of one year. The last statistics published estimate the producing area in Austria at 281,765 square kilometers, and in Hungary at 302,847 square kilometers, or together 584,612 square kilometers, and

the unproductive soil at 37,434 square kilometers in both countries together.

It is well known that Austria as well as Hungary possesses the fundamental conditions for successful agriculture, and that the climate as well as the quality of the soil is most favorable to agricultural pursuits. Of the 22,000,000 of the inhabitants of Austria, it is estimated about 12,000,000 are engaged in agriculture and forest culture, and of the 15,000,000 of people in Hungary about 6,000,000 follow the same pursuits.

Nine hundred and eighty-three societies have been organized in Austria and one hundred and forty-one societies in Hungary for the sole purpose of encouraging and fostering the culture of the soil and of the forest.

In Bohemia, Moravia, Silesia, Upper and Lower Austria, Salzburg, Vorarlberg and Northern Styria, Tyrol, and Carinthia agriculture is carried on on rational principles, while in the other portions of Austria, and especially in the Hungarian provinces, the tillage of the soil, forest culture, and cattle raising are not pursued with the same diligence nor with equal intelligence.

The harvest of 1885 produced a medium yield, and from all the information I have been able to gather upon the subject, I am inclined to believe that the following estimate of the yield of 1885 is substantially correct. The official statistics will not be published until six months hence.

Estimate of grain harvested in Austria-Hungary in 1885.

[1 hectoliter = 2½ bushels. 1 meter centner = 221½ pounds. The term monarchy is used to designate both countries together.]

Produce.		Austria.	Hungary.	Monarchy.
Wheat and spelt.....	hectoliter	15,633,000	34,050,000	49,683,000
Rye.....	do	29,012,000	18,000,000	47,012,000
Barley.....	do	17,261,000	16,000,000	33,261,000
Oats.....	do	32,282,000	20,000,000	52,282,000
Corn.....	do	5,706,000	30,000,000	35,706,000
Millet and buckwheat.....	do	3,700,000	1,030,000	4,730,000
Potatoes.....	do	90,000,000	30,000,000	120,000,000
Flax.....	Met. centner	421,000	80,000	501,000
Hemp.....	do	249,000	490,000	739,000
Tobacco.....	do	37,000	615,000	652,000

The price and value of grain during 1884 and 1885.

[Expressed in florins per 100 kilograms.]

Months.	Wheat.		Barley.		Rye.		Oats.		Corn.	
	1884.	1885.	1884.	1885.	1884.	1885.	1884.	1885.	1884.	1885.
January.....	10.05	8.30	11.80	10.10	8.70	7.35	7.50	7.10	6.60	6.30
February.....	10.40	8.55	11.50	9.90	8.75	7.35	7.55	7.37	6.60	6.25
March.....	10.50	8.65	11.50	10.25	9.05	7.60	7.60	7.60	6.80	6.50
April.....	10.25	9.35	11.50	10.25	9.08	8.15	7.60	7.82	6.80	7.20
May.....	10.40	9.50	14.50	10.25	9.35	8.35	8.35	7.60	7.10	6.95
June.....	10.75	9.20	11.50	10.00	9.65	8.00	8.50	7.00	7.20	6.60
July.....	10.40	8.50	11.25	9.25	9.35	8.75	8.35	6.75	7.10	6.38
August.....	9.40	8.10	10.80	9.00	8.50	7.30	7.50	6.50	7.10	5.90
September.....	8.70	7.70	10.30	9.25	7.70	6.90	7.30	6.55	7.40	6.25
October.....	8.80	7.90	10.30	9.25	7.50	6.90	7.50	6.70	7.10	6.25
November.....	8.90	8.25	10.30	9.50	7.60	7.00	7.50	6.80	7.10	6.30
December.....	8.80	8.30	10.10	9.50	7.40	7.00	7.50	6.75	7.10	6.40

The average net proceeds from farming lands, gardens, meadows, vineyards, and forests per joch are estimated as follows. One joch is equal to 1.42 acres.

Description.	Per joch.
	<i>Florins.</i>
Farming lands	5.54
Meadows	4.86
Vineyards	9.41
Gardens	10.08
Forests	1.23

The value of farming lands ranges from 41.80 florins per joch in Dalmatia to 203.60 per joch near Trieste.

That of meadows from 23.40 florins per joch in Bukowina to 168.40 florins per joch in Upper Austria.

That of garden lands from 52.80 florins per joch to 421.80 florins per joch near Trieste.

That of vineyards from 66.60 florins per joch in Carinthia to 450 florins per joch near Trieste.

That of forests from 3.60 florins per joch in Dalmatia to 55.80 florins per joch near Trieste.

The estimated value of these lands is based upon the assumption that the average net proceeds represent 5 per cent. of the capital invested.

FRUIT AND WINE CULTURE.

In Austria, as well as Hungary, the culture of fruit is carried on with remarkable success, and large quantities of fruit are exported.

The culture of the grape extends to all parts of Austria Hungary, with the exception of Upper Austria, Salzburg, Galicia, and Silesia. The most extensive vineyards, however, are situate in Hungary, Croatia, Slavonia, Dalmatia, Lower Austria, and on the Illyrian coast.

The average yearly production of wine is estimated as follows (per hectoliter of 26½ gallons):

Austria	3,330,000
Hungary	4,940,000
Total	8,320,000

The wine product for the year 1885 was excellent in both quality and quantity, and will probably exceed the usual average.

The culture of the olive tree in Dalmatia is one of the principal sources of income for the inhabitants of that Kingdom. Olive trees are also cultivated in Istria and South Tyrol.

The average yearly production of olive oil in Austria amounts to 115,000 meter centner=105 kilograms each (221.20 pounds avoirdupois —1 metrical centner.)

HORSES, CATTLE, SHEEP, HOGS, &C.

The last census of live stock was taken contemporaneously with that of the population in 1880, and exhibits the following figures:

Animals.	Number.	Number.	Total.
Horses	1,483,282	2,078,528	3,541,810
Asses and mules	49,618	33,746	83,364
Cattle	8,884,077	5,311,378	13,895,455
Sheep	3,841,340	9,838,133	13,679,473
Goats	1,006,675	333,233	1,339,908
Hogs	2,721,541	4,160,127	6,881,668

The Hungarian horses are most excellent roadsters. Many of the best hacks in Vienna are drawn by blooded Hungarian horses; they are superior to any teams used anywhere in the United States for the same purpose. Their power of endurance is particularly remarkable; a Vienna "Fiaker" will drive up hill and down hill on a swinging trot for hours at the time without change of gait or breathing spell, and these "Hungarian rattlers," as they are termed, seem to be as fresh at the end of the road as at the starting point. They are about the same in size as the ordinary American horse, but their lungs and muscle must be of vastly superior quality. It seems as if it would be quite desirable to import them to the United States free of duty, even if they were not imported for breeding purposes only.

FOREST CULTURE.

Of the total area of Austria and Hungary, 32.6 per cent. is covered by forests; in Austria the forests cover 9,515,761 hectares, and in Hungary 9,325,671 hectares.

The state has exercised a careful control over the forests of the country for more than a century, but not until the year 1852, when a special forest law was enacted, was a rational forest culture adopted. Since the enactment and enforcement of this law the systematic culture of the forests has been brought to a very high state of perfection, especially in Bohemia, Silesia, Upper Austria, and Salzburg.

No reliable official statistics as to the yield of these forests have as yet been published. The only estimate (not official) which has been brought to my notice places the annual product in wood at 210,000,000 of cubic meters. Though the yield of the forests is decreasing, it is as yet sufficient not only to supply the home demand, but very large quantities of wood are annually exported.

The oak forests are utilized for the fattening of hogs, especially in Hungary and in Istria. The gathering of gall-nuts and tanbark in these regions yields quite a large revenue.

Potash, rosin, and turpentine are also among the products of the woods, especially in Northern Hungary.

SYNOPSIS OF THE FOREST LAW OF 1852.

By virtue of this enactment the Government assumes entire control over (1) the Imperial forests; (2) forest commons of cities and villages; (3) private forests.

No forest grounds can be used or cultivated for any other purpose except for forest culture without permission of the Government.

If waste is committed, a penalty not exceeding 10 florins per joch is inflicted and the damaged area must be replanted.

The culture of each forest must be conducted in such manner as not to damage a neighboring forest. A wide strip of thick forest is to be left along the line of the neighboring woods as protection against the wind until these woods are sufficiently advanced in growth.

On the shores of large rivers and lakes, and on mountain sides where landslides are probable, timber can only be cut and tree stumps extracted with permission of the Government and in accordance with established rules.

Leaves can only be gathered and raked together with wooden rakes, and the ground must not be raked up, so that young timber may not be injured.

Timber can only be cut in accordance with the strict rules established by the Government.

Forest fires are particularly guarded against. Every person is required to give notice of such fire to the nearest authorities. In case of omission fine and imprisonment follow: fine 1 to 10 florins; imprisonment 1 to 3 days.

The owner of a forest on fire can summon all neighboring villages as a *posse comitatus* to extinguish the flames.

Owners of forests must guard against damage by insects, and at once give notice to the authorities on discovering the ravages of insects.

Owners of large forests, the exact dimensions of which are for the purposes of this provision fixed by law, can employ as superintendent or chief managers only such persons as are approved of by the Government after an examination.

In short, the control of the Government over all forests within the borders of the Empire is unlimited; waste and mismanagement are almost impossible; private rights are completely subordinated to the public requirements.

The beautiful and extensive forests in the immediate vicinity of Vienna, which are partly the property of the crown and partly owned by private individuals, would doubtless have been exterminated long ago were it not for the strict and systematic enforcement of this preventative enactment.

FISHERIES.

The sea fisheries are of considerable importance on the shore and on the islands of the Adriatic, especially in Dalmatia and Istria, whose inhabitants derive a tolerably large revenue from its pursuit. The receipts are, however, gradually diminishing.

The last statistics which I have been able to obtain estimate the annual gross receipts from these sea fisheries at 87,200 meter centners, of the value of florins 1,748,000. The contingent expenses and wages amount to 1,515,000 florins, which leaves a net annual profit of 233,000 florins. The number of fishermen is estimated at 10,960.

MINING AND SMELTING.

Under the mining law of May 23, 1854, the permission of the Government is required to operate any mine containing metals, sulphur, alum, vitriol, salt, graphite, coal, or turf. Not even prospecting is permitted without the authority and supervision of the mining bureau.

Austria-Hungary is not excelled by any country in Europe in the great variety of minerals which its mines contain.

The greatest number of mines and smelting works are situate in Bohemia. They employ nearly 47 per cent. of all the laborers engaged in this industry, the total number of which is estimated at 143,681 in Austria-Hungary.

The most important are the coal, iron, and salt mines. Sixty-three per cent. of all the coal is the product of Bohemian mines.

Iron is found principally in Styria, Carinthia, Moravia, Bohemia, and the northern and southeast portions of Hungary.

Salt mining is a monopoly of the Government; only sea salt may be produced by private industry, but the product must either be sold to the state or exported. The salt mines in the Carpathian Mountains are inexhaustible.

Gold and silver are found in Transylvania and Bohemia; copper in Hungary, lead in Carinthia, zinc in Galicia, tin in the Bohemian mountains, quicksilver in Carniola, sulphur in Galicia, graphite mostly in Bohemia, Moravia, and Styria, and asphalt in Dalmatia and Tyrol.

The total product of the mines of Austria in 1884 amounted to 49,903,842 florins.

The total product of the smelting works of Austria in 1884 amounted to 31,733,183 florins.

The following table shows the product of the mines of Austria during 1884:

Products.	Value.	Products.	Value.
	<i>Florins.</i>		<i>Florins.</i>
Coal	22,777,568	Zinc ore	314,596
Peat	18,081,618	Copper ore	280,238
Silver ore	3,020,365	Sulphur ore, alum, vitriol, and slate.	146,344
Iron ore	2,617,558	Other ores and minerals	365,666
Lead ore	1,071,266		
Graphite	622,397	Total	49,903,842
Quicksilver	606,266		

The following table shows the values of the separate products of the smelting works of Austria during 1884:

Products.	Value.	Products.	Value.
	<i>Florins.</i>		<i>Florins.</i>
Pig-iron	23,723,730	Oleum and sulphuric acid	661,730
Silver	3,105,740	Copper	473,237
Lead	1,735,046	Iron, vitriol, and alum	212,610
Quicksilver	851,009	Other metals and smelting products ..	266,233
Zinc	704,348		
		Total	31,733,183

The total value of the products of the smelting works of Hungary is shown by the following table:

Products.	Value.	Products.	Value.
	<i>Florins.</i>		<i>Florins.</i>
Gold	2,200,000	Zinc	126,000
Silver	1,911,000	Antimony	17,000
Quicksilver	49,000	Sulphur	2,000
Copper	949,000	Alum	29,000
Lead (glätte)	48,000	Mineral paint	4,000
Pig-iron	0,708,000		
Lead	255,000	Total	12,649,000
Nickel and cobalt	351,000		

SALT MINES.

The salt mines of Austria yield an average annual product of the value of about 22,000,000 florins, while the annual yield of the salt mines of Hungary amounts to about 10,000,000 of florins.

MANUFACTURES AND INDUSTRIES.

The industries of the Empire of Austria are governed by the industry law of the 20th of December, 1859, amended in March, 1883, and again amended in March, 1885.

In pursuance of this law industries are either free, *i. e.*, can be carried on after notice is given to the political district authorities, or mechanical industries, which require proof of the requisite skill and fitness, or licensed industries, which require a special license of the political authorities. In case an industry requires steam or water power, or affects the health or comfort of the neighborhood, either by reason of offensive odors or

nnusual noise, its establishment is also subject to the special permission of the local authorities.

Since 1850 chambers of commerce and industry have been established in the Empire; their organization and purpose are at present prescribed by a law passed in 1868. Their purpose is the protection and encouragement of commerce and industry, with reference to which they are expected to inform the Government. Measures relating to industry and commerce proposed by the Government are submitted to them for their opinion and report, and they are in direct official communication with the minister of commerce.

It is a notable fact that their opinions, although always solicited, do not seem to be in any manner binding upon the ministry and are frequently entirely disregarded.

The new amendment of the tariff which proposes a considerable increase has lately been submitted to the chambers of commerce of both Austria and Hungary for their opinion and report, and they have quite recently almost unanimously reported against such an increase. After exhaustive debates, their recommendations were most decidedly against the amendment, but the Governments of both Austria and Hungary have brushed away these objections like cobwebs, and decided upon the passage of the law, and what the Governments decide a majority of the Reichstag will doubtless accept as *res adjudicata*.

There are 29 of these chambers of commerce in Austria and 15 in Hungary; their practical influence, however, is not, as it seems, to be measured by their number.

NUMBER EMPLOYED IN INDUSTRIAL PURSUITS.

According to the census of 1880 there were employed in industrial pursuits in Austria and Hungary together 2,946,068 persons, or 7.8 per cent. of the whole population. Of these were employed in Austria, 2,157,098; in Hungary, 788,970.

Including all members of families and servants, the number of people deriving their living from industrial pursuits amounts in Austria to 4,710,047, or 21.3 per cent. of the whole population of the Empire.

The industrial establishments of Austria are able to compete with other countries in many articles of manufacture. In Hungary, however, industries and manufactures are yet in their infancy.

Principal articles of manufacture.

- | | |
|---|-----------------------------|
| 1. Hardware. | 11. Silk goods and velvets. |
| 2. Metal ware. | 12. Woolen goods. |
| 3. Machines. | 13. Cotton goods. |
| 4. Carriages, wagons, and railroad cars. | 14. Linen goods. |
| 5. Surgical instruments, scientific apparatus, and musical instruments. | 15. Laces, fans. |
| 6. Earthen, terra-cotta, and porcelain ware. | 16. Paper. |
| 7. Glassware. | 17. Beet-sugar. |
| 8. Precious stones and their imitations. | 18. Beer. |
| 9. Wooden ware. | 19. Spirits. |
| 10. Leather ware. | 20. Tobacco and cigars. |
| | 21. Chemical products. |

Metal industries.—The production of refined iron and steel in Austria is carried on in 140 establishments, with 16,625 laborers. The average annual production is 2,210,000 meter centners wrought and cast iron, 73,000 meter centners wrought steel, and 1,032,000 meter centners cast steel. Hungary produces 200,000 meter centners cast steel.

The manufacture of hardware is one of the most important industries of Austria. In the Alpine lands the manufacture of scythes and sickles is carried on to a very considerable extent. The product is exported principally to the east and southeast of Europe. These factories manufacture annually 7,800,000 scythes and straw-knives and 1,340,000 sickles.

Knives and cutlery are manufactured in Vienna, in Styria, and in Carlsbad, Bohemia.

Arms are manufactured at and exported from Styria in great quantities. They are of superior workmanship; and in this connection I beg leave to refer for detailed information as to the arms factory of Styria and its product to my special report No. 27, bearing date July 15, 1885.

Gold and silver ornaments are principally manufactured in Vienna, to a less extent in Prague and Buda-Pesth.

Metal ware, ornaments, bronze and plated ware, and jewelry are also largely manufactured in Vienna, and find ready sale for export to the United States and the larger cities of Europe.

Berlin manufacturers have recently introduced an imitation of bronze ware, which is simply cast tin bronze-washed; it is both "cheap and poor."

Machines are manufactured in Vienna and vicinity, in Prague, Brünn, Graz, Trieste, and Buda-Pesth.

According to the last census of 1880, Austria contained 323 machine factories, with 20,675 laborers.

The machine manufacturers of Austria imitate a great number of American machines not patented here, in the same manner in which Germany imitates American tools. These imitations are invariably much below the American pattern in style, finish, and usefulness—the tools as well as the machines.

Carriages are manufactured in Vienna and Buda-Pesth. The industry in carriages and wagons supplies not only the home demand, but the product is also an article of export. The average export is 3,900 per annum.

Railroad cars are manufactured in several large establishments in Vienna, Prague, Marburg, and Buda-Pesth.

Surgical instruments and apparatus are manufactured in comparatively great quantities in Vienna, and the production of scientific apparatus has largely increased.

Pianos, string and brass instruments are manufactured in Vienna, Prague, and Königgratz.

Clocks are also manufactured in Austria, but watches are imported mostly from Germany and Switzerland. They are of inferior quality and design. Most people wear cheap watches; a good solid gold watch is a rarity; watches with gilded and silver-washed pewter cases are the staple article.

Earthen, terra cotta, glass, and porcelain ware.—The porcelain industry of Austria has reached a very high state of perfection. It is confined to Bohemia, which, at the time of the census of 1880, contained 26 porcelain factories with 4,896 laborers. Porcelain printing is one of the fine arts of Vienna, and the depots where these products of skill and artistic taste are displayed are veritable art galleries. Comparatively few of these porcelain decorations find their way to the United States.

The high tariff limits their importation to our country. Only the very wealthy can afford to buy them. There are dinner sets produced here which cost thousands of dollars at the manufacturer's. They are so heavily decorated with ducat gold that the manufacturer engages to pay 50 per cent. of the cost price of any broken pieces of the set.

Earthen ware is also manufactured in Bohemia and in Moravia, Lower Austria, and Silesia. Terra-cotta ware is manufactured in Vienna and vicinity, and the show-windows of this metropolis are crowded with terra-cotta busts and figures, displaying a high state of artistic taste and skill and an utter disregard of puritanical condemnation of the vagaries of the realistic school in painting and sculpture.

The glass industry of Bohemia is very extensive. The census of 1880 discloses the fact that of 30,339 laborers employed in the glass works of the Empire, 25,118 were employed in Bohemia and 2,140 in Moravia.

The crystal glass of Bohemia is famed for its purity and beauty of form. Looking-glass and plate-glass are produced in the Pilsen district, and glass decorations of manifold shapes and colors are also a specialty of Bohemian manufacturers.

There are in all 3,105 glass works and glass refineries in Bohemia.

MISCELLANEOUS.

Precious stones.—Garnets are a specialty of Prague, and exquisite taste is displayed by the jewelers of that city in the production of garnet ornaments, and Vienna produces fine imitations of precious stones.

Wooden ware.—Great quantities of wooden ware are manufactured for export. Bent wood furniture is a Vienna specialty, and large invoices of these goods are annually exported to the United States as well as to Eastern Europe and South America.

Wood carving is also quite an extensive industry.

Leather ware.—The tanneries of the Empire are situate in Moravia, Lower Austria, Bohemia, and Hungary. The production of leather is one of the oldest and most extensive industries of the country. Boots and shoes are manufactured in Vienna, Prague, Brünn, and other cities of Bohemia; also in Buda-Pesth. Most of this product is exported to the Levant. For detailed information on the shoe and leather industry I beg leave to refer to my shoe and leather report No. 30, bearing date July 23, 1885.

Gloves are a specialty of Vienna and Prague. They are very cheap to one used to American prices; but I do not think that, as to texture and finish, the Austrian article can at all be compared with the French gloves; the latter are certainly of better quality.

TEXTILES.

Silk goods and velvets.—South Tyrol and Görz produce annually 100,000 kilograms of raw silk and employ 48,302 spindles. The production of silks and velvets in Austria-Hungary employs 5,609 hand looms and 1,097 mechanical looms. Hungary has but one silk weavery at Pancsora, which produces annually 5,000 to 6,000 kilograms of raw silk.

Woolen goods.—The annual product of wool is estimated at more than 700,000 centners; considerable quantities of fine wool are exported, and only inferior, coarse wools are imported from Russia and Turkey. Woolen goods are manufactured principally in Bohemia and Moravia and in Silesia; small quantities only are manufactured in Upper Austria. The spindles in operation in the Empire number in all about 575,000, and the hand and mechanical looms together about 42,000.

The wool industry is in its infancy in Hungary; a small number of woolen factories are situate in Nevgrad and in the district of Pressburg.

Cotton goods.—The spindles operated in the Empire for the manufacture of cotton goods numbered 2,061,973 according to the last statistics. Fifty-three per cent. of all these spindles are operated in Bohemia.

Hungary has in all 14,918 spindles.

Linen goods.—At the time of the last census (1880) 323,456 spindles for the manufacture of linen goods were in operation in the Empire, of which number 235,358 were in operation in Bohemia, the balance in Moravia and Silesia.

Laces.—Laces are manufactured in the Bohemian mountains and largely exported by the merchants of neighboring Saxony, who invoice these laces frequently as products of Saxony. The lace-makers earn a miserable pittance; the majority do not earn more than 8 cents per day.

Fans.—Fans are largely manufactured in Vienna and exported from here in large quantities to the United States. They are skillfully and tastefully painted by home artists, who have acquired such remarkable proficiency in these decorations that they can paint fans about as fast as a good penman can write.

Paper.—There are 167 paper factories in the Empire, mainly situate in Bohemia, Upper and Lower Austria, and Styria.

Hungary has 32 paper factories.

BEET SUGAR, ETC.

Sugar.—The beet sugar manufactured is not only sufficient in quantity to supply the home demand, but large quantities are exported.

Two hundred and thirty-two beet-sugar factories are in operation in Austria-Hungary, of which 15 are in Hungary, while 154 are situate in Bohemia.

Beer.—This Austrian beverage is known for its excellent quality. According to the last statistics there were 2,094 breweries in operation in Austria-Hungary, of which 1,970 are situate in Austria (and of these 818 in Bohemia) and 124 in Hungary.

Spirits.—Distilleries are operated mostly in connection with agriculture, and as an auxiliary source of revenue to the farmer. They are small establishments with stills of very limited capacity. Austria-Hungary has 125,052 of these small distilleries, of which 36,752 are in Austria and 88,300 in Hungary.

TOBACCO AND CIGARS.

The manufacture of smoking tobacco and cigars is a Government monopoly. There are 28 Government tobacco and cigar factories in Austria and 10 in Hungary. The cigars are mostly consumed in the country; a very small quantity is exported. The imperial royal director-general of the tobacco factories of Austria informed me that the export trade of cigars was not cultivated, and that the capacities of the factories was insufficient to supply foreign countries.

The cigars manufactured in the Empire are of excellent quality, when one considers the very low figure at which they are sold. Each quality or brand has its fixed price, and cannot be sold at a higher figure than that fixed by the Government. The consequence is that as good and as cheap a cigar can be obtained in the remotest hamlet in the mountains of Tyrol as on the most frequented streets in Vienna.

The importation of Havana cigars is also a monopoly of the Government, and they can only be purchased at the so-called specialty stores established by the Government, and at fixed prices.

A good cigar with Havana filler and Sumatra wrapper is sold at 7½ kreuzers, or at 3 cents. This cigar is equal in flavor to a good seed and Havana cigar which retails in the United States from 8 to 10 cents.

The latest statistics which I have been enabled to obtain cover the first three quarters of 1885. During this period the sales in the Empire were as follows:

Cigars of Austrian manufacture sold from January 1 to October 1, 1885..	971,795,714
Imported cigars sold during the same period	3,251,301
Cigarettes sold during the same period	255,622,689

Amount received in florins during same period:

Austrian cigars	28,264,735
Imported cigars	583,406
Cigarettes	2,249,109

So that in three quarters of a year, viz, from January 1, 1885, to the 1st of October, 1885, there were sold and smoked in the Empire of Austria of domestic and imported cigars and cigarettes, 1,230,669,704; receipts for same, 31,097,250 florins.

If we add one-third to the above totals as the probable figures for the last quarter of 1885, we obtain the following results for the year 1885:

Cigars and cigarettes sold in Austria during 1885	1,640,892,938
Amount received for same	florins.. 41,463,000

The manufacture and sale of smoking tobacco and snuff for the first three quarters of 1885 amounted to 18,881,304 kilograms, equal to 41,538,869 pounds English.

Considerable quantities of smoking tobacco are exported as Turkish tobacco.

The receipts for smoking tobacco and snuff during the same period were:

	Florins.
Smoking tobacco	20,866,788
Snuff	2,751,511
Total	23,618,299

So that the total receipts for the first three quarters of 1885 for cigars, domestic and foreign, cigarettes, snuff, and smoking tobacco amount to 54,715,567 florins.

If we add one-third to this total as the probable figure for the last quarter of 1885 we obtain as the total result for the whole of the year 1885 the sum of 72,954,089 florins as proceeds of the manufacture of tobacco.

I have been unable to obtain the statistics for Hungary, but presume the manufacture and consumption is in proportion to the population of the two countries, viz, 15 to 20.

It is not at all surprising when we contemplate these figures to be informed that the Government factories can barely supply the home demand and pay no attention to the export trade.

CHEMICAL PRODUCTS.

Chemicals are produced in sufficient quantities in Bohemia, Lower Austria, and Silesia to supply the home market, and considerable quantities are exported.

Soda is imported, and in consequence of the increased price of this chemical the manufacture of potash has been considerably diminished. Pharmaceutic materials and perfumeries are largely manufactured in Vienna. Soap and candles are also produced in Vienna.

COMMERCE.

Austria and Hungary form one common customs domain under the commercial treaty of 1878, from which, however, the free ports of Trieste and Fiume are as yet excluded. In pursuance of this treaty no duty can be imposed on any articles exported from one country to the other. Internal taxes can be imposed on articles imported from one country to the other, only to the same extent to which they are taxed in the country in which they are produced. The custom laws are uniform for both countries.

The subjects of the one country who desire to follow industrial pursuits in the other enjoy in every respect equal rights with the subjects of the other country; this equality extends also to the privileges of navigation. The treaty remains in force until December 21, 1887, and if no notice of intention not to renew is given, it continues in force for ten years longer, and so on, from ten years to ten years.

TRADE WITH THE UNITED STATES.

The annual reports issued by this consulate-general showing the export from Austria-Hungary to the United States, although they contain an enumeration of all the articles declared for export to the United States at the several United States consulates and agencies in Austria-Hungary, do not by any means give a correct estimate of all the Austrian products exported to the United States, for the reason that many invoices of Austrian goods are shipped to Germany by exporters and brokers, and from thence together with goods of German manufacture exported to the United States as German products. Several instances disclosing this state of facts have recently been brought to my notice. The United States consuls are able to correct this irregularity only in exceptional cases, when they obtain proof of these facts, but generally they have no reason to doubt the declarations of the shipper, that the invoice, the consular authentication of which is required, contains goods produced in and shipped from the consular district where the authentication is solicited. I have recently ascertained that laces produced in the Bohemian mountains, in the consular district of Prague, have for years been shipped to Annaberg, in Saxony, in bond, and from thence to the United States, the invoices being authenticated at the United States consulate at Annaberg, and the laces being declared as manufactures of that district, so that Bohemian laces enter the market of the United States as products of Saxony.

One reason for this practice is that the export trade to the United States is to a great extent in the hands of commission merchants and brokers, and that few manufacturers export directly, and it seems that these brokers find it for their interest not to disclose to their American customers the sources from which they derive their supplies.

American importers might find it for their interest to deal directly with the manufacturers as to all articles not confined exclusively to home industry.

Mercantile marine of Austria.

Class.	1874.		1884.	
	No.	Tons.	No.	Tons.
Sailing vessels.....	2, 114	192, 060	1, 854	161, 340
Steamers	99	58, 164	118	74, 632

Showing a decrease of tonnage in the whole merchant marine of 14,262. This decrease during the decade, 1874 to 1884, is accounted for as follows:

Ships lost by shipwreck	174
Ships dismantled	18
Ships sold to foreign countries	69
Total loss	261

A comparison between the number of sailors employed by the merchant vessels of Austria in 1874 and 1884 results as follows:

Class.	1874.	1884.	Increase.	Decrease.
Sailing vessels	9,060	6,764		2,296
Steamers	2,579	2,680	101	

Total decrease in whole merchant marine during the decade 1874 to 1884, 2,195 sailors.

Hungarian merchant marine.

Sailing vessels at close of 1874	360
Tonnage of same at close of 1874	68,824
Sailing vessels at close of 1884	324
Tonnage of same	64,345
Decrease in sailing vessels from 1874 to 1884	36
Decrease in tonnage of same during same period	4,479
Decrease in number of sailors during same period	464
Steamers at close of 1874	6
Tonnage of same	540
Steamers at close of 1884	20
Tonnage of same	6,286
Increase in steamers from 1874 to 1884	14
Increase in tonnage of same during same period	5,746
Increase in number of sailors during same period	170

It is claimed that in spite of the evident decrease of the sailing vessels, the carrying capacity of both marines has increased in consequence of the increase in the number of steamers, the steamers having three times the carrying capacity of sailing vessels by reason of superior speed.

NAVIGATION OF TRIESTE.

Table showing the number of arrivals at this port during the year 1885 compared with 1884.

Flag.	1885.		1884.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
Austro-Hungarian	4,066	698,635	4,156	643,728
North American			2	1,978
Argentine Republic	1	65		
Belgian			1	1,229
Danish	2	313	2	888
French	10	9,152	4	1,298
German	48	40,052	40	31,076
Greek	146	15,810	171	21,983
English	236	266,971	214	251,066
Italian	1,731	214,636	1,554	185,049
Montenegrin	45	1,453	55	1,756
Netherlands			1	651
Turkish	34	3,065	42	3,492
Portuguese				
Russian	4	1,837	2	266
Samoan	2	96	2	97
Swedish and Norwegian	46	17,863	30	13,135

It is a noticeable fact that not a single vessel arrived at the port of Trieste under the flag of the United States of America.

Table showing the number of departures of vessels from Trieste during 1885 as compared with 1884.

To—	1885.		1884.	
	Vessels.	Tonnage.	Vessels.	Tonnage.
Austria-Hungary.....	3,956	229,262	4,274	215,242
America.....	61	72,270	60	64,838
Africa.....	106	91,593	98	80,275
Asia.....	34	59,941	35	59,697
Australia.....				
Hamburg.....	18	12,760	8	5,714
Belgium.....	1	1,263	1	885
Bulgaria.....	2	1,944		
France.....	116	76,017	143	94,756
Great Britain and Ireland.....	132	149,578	139	156,452
Greece.....	189	39,867	214	46,230
Italy.....	1,793	224,634	1,569	174,826
Montenegro.....	2	28	3	162
Netherlands.....			2	1,524
Portugal.....	1	549		
Roumania.....	2	1,640	1	1,280
Russia.....	19	17,078	25	17,132
Spain.....	10	7,647	6	4,690
Sweden and Norway.....				
Turkey.....	484	275,980	482	252,326
Total.....	9,632	1,264,051	7,060	1,176,529

As to the navigation at the port of Fiume during 1885, I have as yet been unable to obtain reliable statistics, but will forward the same in a supplemental report at an early date.

POST-OFFICES AND TELEGRAPHS OF AUSTRIA.

The official statistics have just been published. They are a full year behind time. This delay is a well-known feature of Austrian statistics.

Letters, printed matter, and packages delivered.

Year.	Letters and postal cards.	Samples and printed matter.	Newspapers.	Total.
1883.....	335,633,500	47,986,400	81,802,500	464,922,000
1884.....	363,448,100	51,712,200	85,818,000	500,478,300

Postal orders and packages delivered C. O. D. in 1883: Postal orders, 360,836,260 florins; packages valued at 8,937,328 florins.

Postal orders and packages delivered C. O. D. in 1884, together, 399,280,117 florins.

Number of telegraph dispatches sent.

Year.	Inland.	International.	Official.	Total.
1880.....	3,296,943	1,999,372	446,984	5,743,299
1881.....	3,489,675	2,294,097	453,406	6,238,078
1882.....	3,723,338	2,412,948	489,917	6,626,203
1883.....	3,737,636	2,329,919	492,398	6,559,953
1884.....	6,867,077	2,815,374	500,871	6,683,322

BANKS.

The Austro-Hungarian Bank has the exclusive privilege of issuing notes. The two principal branches of this bank are established in Vienna and Buda-Pesth, with 36 smaller branches in Austria and 27 in Hungary. The latest statistics give the following details as to the status of the several banks of Austria-Hungary in March, 1885:

Banks.	No.	Stock issued.	Stock paid in.
		<i>Florins.</i>	<i>Florins.</i>
Austro-Hungarian Bank.....	1	90,000,000	90,000,000
Private banks in Austria.....	50	239,882,000	211,782,000
Private banks in Hungary.....	128	63,291,000	59,897,000
Total.....	177	393,173,000	361,679,000

Savings banks in Austria.....	356
Savings banks in Hungary.....	402
	758

FINANCES.

The financial condition of Austria has changed little for the better within the last year. True, the budget for 1886 does not show quite as large a deficit as in 1885. The deficiency is less by 8,500,000 of florins than in the past year, but this reduction is due in a measure to the increased estimate of the prospective revenue from taxes placed on the credit side of the budget. This estimate places the income from direct and indirect taxation at 6,000,000 more than in 1885. Great doubts are expressed by the economical critics that the Government will be enabled to collect the amount of taxes thus estimated; but they maintain that, even if this item of taxes should be collected in full, the success of the Government in this direction, and the fact that by means of increased taxation the old time deficiency is reduced, would not be any greater proof of a better state of the finances than the fact that an individual carried his movables to the pawn-shop for the purpose of paying his running expenses would be proof of the improvement of his financial condition.

The reasons for this chronic deficiency in the coffers of the Empire of Austria are too patent to need enumeration. A glance at the budget discloses both cause and effect.

The total expenditures for 1886 are estimated at 513,582,710 florins, and the total revenues at 506,939,788 florins, leaving a prospective deficit of 6,642,922 florins. In comparison with the budget of 1885, the estimate of expenditures for 1886 is reduced 6,061,000 florins, and the revenues estimated at 1,978,000 florins in excess of those of 1885. The deficiency, which in 1885 amounted to 15,237,000 florins, has thus been reduced 8,590,000 florins.

A peculiar source of revenue, which above all others attracts the attention of an American, is the income from the several lotteries. This income consists in the percentage of profits which is collected by the Government from all sums won by the holders of the lottery bonds. On winnings in the state lottery the Government charges 20 per cent.; on those in most other lotteries, 15 per cent. Aside from this the Government derives considerable revenue from the stamp tax of 50 kreuzers = 20 cents, which is imposed on all the so-called "promessen." These "promessen" (promises) represent a peculiar speculation or game of

chance. Under a law in force for many years the holder of a lottery bond may sell his chance in the next drawing without disposing of his bond; but he must issue a certificate, which is furnished in blank by the Government, and for sale on payment of the 20-cent stamp tax. If the bond draws a winning number the holder is paid its face, and the holder of the "promesse" pockets the winning. If the bond is not drawn at all, the holder may sell another "promesse" for the next drawing. This "promessen gambling" gives these lottery bonds or stocks a quotation in the market beyond the real intrinsic value, and the high quotation of some of the Austrian securities is based in part upon this game of chance.

The exact amount of the revenue derived from these state lotteries and the number lottery, as estimated for the year 1886, is not stated in the budget, the several items having not as yet been published in detail, but the annual revenue derived from this source averages about 20,000,000 florins, and is included in the total estimate under the head of the total revenues from the ministry of finance.

The budget of Austria for 1886.

EXPENDITURES.

Subject of expenditure.	1886.	1885.
	<i>Florins.</i>	<i>Florins.</i>
Court.....	4,650,000	4,650,000
Bureau of the Empire.....	75,383	75,012
Reichsrath.....	960,859	1,086,444
Reichsacourt.....	24,000	24,000
Ministerial council.....	1,029,782	1,028,627
Quota of general budget.....	90,215,477	89,387,439
Ministry of the interior.....	19,245,035	19,007,022
Ministry for national defense.....	9,679,118	9,528,306
Education and ecclesiastical affairs.....	19,867,200	19,769,041
Ministry of finance.....	98,251,318	108,112,561
Commerce.....	83,381,300	85,780,954
Agriculture.....	14,025,917	14,123,298
Ministry of justice.....	21,027,059	20,972,886
First auditor's bureau.....	152,000	151,000
Pensions.....	16,288,901	15,940,240
Subsidies.....	11,733,948	11,138,380
Public debt.....	122,091,180	120,508,762
Management of same.....	875,250	934,200
Total.....	513,582,710	520,198,772

REVENUES ESTIMATED FOR 1886.

Source.	1886.	1885.
	<i>Florins.</i>	<i>Florins.</i>
Ministerial council.....	710,900	715,200
Ministry of the interior.....	1,142,254	1,131,460
Ministry for national defense.....	254,640	218,304
Ministry for education and ecclesiastical affairs.....	5,367,761	5,629,246
Ministry of finance.....	407,414,680	408,034,028
Ministry of commerce.....	69,352,307	66,144,710
Ministry of agriculture.....	10,975,297	11,078,940
Subsidies and dotations.....	134,500	214,500
National debt.....	9,220,723	8,967,063
Management of national debt.....	14,600	14,600
Sale of national realty.....	234,100	231,500
Damage paid by railroads.....	1,314,732	.....
Total revenues.....	506,939,788	504,961,495
Total expenditures.....	513,582,710	520,198,772
Deficiency.....	6,642,922	15,237,277

THE BUDGET OF HUNGARY FOR 1886.

The estimated deficiency in the Hungarian budget for 1886 is 13,800,000 florins, 2,000,000 more than the deficit of 1885.

The Hungarian minister of finance stated on the occasion of the recent debate on the budget, that 20,500,000 florins were required for public improvements, of which 14,000,000 were to be expended for railroads and the balance for river improvements. He pointed with some pride to the fact that nearly 4,000,000 of direct taxes were collected in 1885 over and above the previous estimate, and nearly 2,000,000 more of stamp tax. The loss of 2,000,000 in the receipts for tobacco and cigars during 1885 he explained through the impossibility of the Government factories to supply the whole of the demand of consumers.

THE BUDGET OF AUSTRIA-HUNGARY FOR 1886.

This budget covers the expenditures common to both countries. They are paid in the following proportion, 68 per cent. by Austria and 32 per cent. by Hungary, and embrace the expenses of the department of foreign affairs, of the finance department of Austria-Hungary, and of the army and navy.

These expenditures are estimated as follows for the year 1886:

Departments.	Ordinary.	Extraordinary.
	<i>Florins.</i>	<i>Florins.</i>
Ministry of foreign affairs.....	3,797,900	45,400
Ministry of war:		
Army.....	96,224,968	3,272,803
Navy.....	8,925,840	2,168,970
Ministry of finance.....	1,976,740	1,050
Auditor's bureau.....	128,800	
Total.....	111,054,248	5,488,223

Total of all expenditures, 116,542,471 florins.

Of these expenditures, 25,914,132 florins are covered by revenues from custom duties, and the balance, viz, 90,628,339, is to be paid in the ratio above mentioned, 68 per cent. by Austria and 32 per cent. by Hungary.

COMMON DEBT OF AUSTRIA-HUNGARY.

The common debt of Austria-Hungary at end of December, 1884, was 3,106,578,772 florins; at end of December, 1883, was 3,101,951,770 florins; increase during 1884, 4,627,002 florins.

SEPARATE DEBT OF AUSTRIA.

The total separate debt of Austria at end of December, 1884, was 675,909,847 florins; at end of December, 1883, was 646,788,055 florins. Increase during 1884 was 29,121,792 florins.

SEPARATE DEBT OF HUNGARY.

No report for 1884. According to last statistics the total debt of Hungary amounted to 1,175,531,832 florins.

The total debt of Austria-Hungary, including the common debt of both countries, as well as the separate debt of each, amounted in December, 1884, to 4,958,020,451 florins; in December, 1883, to 4,924,271,657 florins. Increase during 1884, 33,748,794 florins.

GENERAL REVIEW OF 1885.

Every economical review of the year 1885, whether published in the organs of the Government or of the opposition, fails to exhibit any satisfaction with the commercial and industrial results of the year 1885, as well as hope for speedy relief and improvement in the immediate future. All parties agree on the fact that the last year has been one of great depression in trade and manufacture; they agree further that a speedy improvement is imperatively demanded, but they disagree most decidedly as to the best means to bring about commercial and industrial success.

The "Creditors' Association," of Austria-Hungary, a society organized for the purpose of mutual protection against fraudulent failures, and for the further purpose of facilitating the most speedy and advantageous settlement of cases of bankruptcy, has just published its annual report, from which it appears that more failures occurred in 1885 than at any time since the existence of the society, with the sole exception of the year 1873, which marked the great panic and financial crisis so well remembered in Vienna. As a cause of this increase of failures the decrease of the purchasing capacity of the people is mentioned as the most important factor, together with the general stagnation of business throughout the continent of Europe and beyond the seas, and the brief war on the Balkan Peninsula also comes in for its share of the blame. Two hundred and sixty-five failures in Austria and 250 in Hungary came within the control of the Creditors' Association in 1885. This is the result of an impartial review of 1885 by prominent merchants, who are supposed to look at the situation exclusively from a practical standpoint, uninfluenced by any political considerations.

The press of the opposition paints the picture still darker; it asserts that a deep seated discontent has taken hold of the people; that the land-owner is at war with the owners of movable capital, the rural districts with the cities, the manufacturer with the merchant, and that the chances of gain in business have become so rare that the attempt is made to force citizens of the state, on account of their race and religion, into the position of strangers, who have no right to the privileges of unlimited competition. If this liberal opposition press which represents the German and Austrian-German factions is to be believed, then the people are groaning under heavy taxes, which are increasing at the very time when the earnings are more and more reduced. It is asserted that a certain corporation was compelled to pay 47 per cent. of its net profits in taxes to the state. The total rents of buildings in Vienna amount to 56,000,000 of florins in round numbers; of this sum, 30,000,000 pay an income tax to the state; the balance are exempt for several reasons; new buildings, for instance, pay no income tax on the rents for a limited number of years, but on the aforesaid sum of 30,000,000 an income tax of 13,000,000 is exacted, being 43 per cent. of the total amount. That rents are quite exorbitant in Vienna is quite natural, and the high rate afflicts particularly the poor families; for the rich the burden is easily to be borne. The land-owners and the aristocracy generally seem to demand that the merchants and manufacturers should relieve the pov-

erty of the laboring classes and better their condition by raising their wages and by sacrificing a portion of their rapidly acquired wealth for their benefit, but the merchants and manufacturers turn upon their accusers and claim that a factory laborer can purchase ten pounds of flour with a day's wages, while the farm laborers employed on the domains of the aristocracy could hardly purchase three pounds of flour with a day's hard labor. And they show the figures and state that the average wages paid the farm laborers, toiling for the wealthy and aristocratic land-owners, amounts to the small pittance only of from 20 to 40 kreuzers per day (from 8 to 16 cents.)

The difference of opinion goes still further; while all admit the stagnation of trade and the depression of most of the industries of the country, the opposition claims that this condition of things is a direct consequence of the high tariff, and of the consequent economical war inaugurated among the nations of Europe; that protection caused a concentration of capital, and was the sole cause of overproduction, and of the consequent stagnation of trade and industries. Politicians and business men holding this opinion maintain that better times will not return until the purchasing capacity of the consumer is restored and production reduced to the measure of demand, and that this consummation can only be reached by removing all impediments to the freedom of trade.

The Government, however, evidently entertains a decidedly different opinion, for there seems to be no doubt that the tariff will be still further increased instead of abolished, and that the last amendment proposed in this direction will pass the Reichstag by a handsome majority.

The fact that the peace of Europe is not yet fully assured adds to the general depression, although the stock exchange of Vienna has thus far courageously ignored all possibilities of a general European war. The Servian-Bulgarian difficulty is still unsettled; little Greece is rattling with its puny sword to an extent which creates suspicion as to a possible power behind the Athenian throne, and the diplomats are on tip-toe of expectation as to the Oriental policy of the new Gladstone cabinet. Bismarck has thrown an additional firebrand into Austria by his speech against the Poles, and to the multifarious race questions of this Empire another disturbing element is added, and the proposition is already discussed what dangers may possibly threaten Austria from the separatistic political aspirations of the Poles, who have long since acquired a strong and influential position in the Diet as well as in the cabinet. If Bismarck fears them in Germany, where thus far they were merely tolerated, what may be the consequences of their constant strife for national autonomy in Austria, where they are a powerful and aggressive element? Thus runs the discussion, and it is not calculated to pour oil upon the troubled waters, and many an Austrian patriot looks with apprehension toward the possibilities of the future.

EDMUND JUSSEN,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Vienna, February 10, 1886.

SCHEDULE A.—Export and import trade.

The following table shows the export and import of Austria-Hungary from January 1, 1885, to the 1st day of November, 1885, and the export and import for the same period during 1884. I am unable to give the figures for the last two months of 1885, as the statistics covering this period will not be published until some time next summer.

Articles.	Imports.		Exports.	
	1885.	1884.	1885.	1884.
Colonial produce..... meter centners.	317, 370	294, 731	100	75
Spices..... do.	20, 394	17, 236	339	309
Tropical fruits..... do.	235, 500	247, 231	4, 024	3, 241
Sugar..... do.	9, 293	8, 405	2, 063, 712	2, 126, 073
Tobacco..... do.	121, 815	112, 321	74, 084	79, 300
Barley..... do.	462, 087	295, 112	2, 421, 203	1, 861, 464
Oats..... do.	846, 497	331, 156	685, 763	502, 303
Corn..... do.	2, 680, 255	1, 789, 242	137, 291	320, 532
Rye..... do.	761, 866	1, 090, 075	67, 403	67, 235
Wheat..... do.	1, 281, 238	977, 679	1, 248, 161	893, 713
Spelt..... do.	262	205	527	931
Millet..... do.	182, 768	78, 896	5, 896	7, 563
Other grain..... do.	64, 827	30, 605	5, 779	4, 606
Malt..... do.	260	975	782, 149	701, 234
Beans, peas, &c..... do.	36, 039	17, 936	872, 395	882, 630
Flour..... do.	12, 108	11, 290	1, 159, 966	1, 183, 486
Rice..... do.	444, 714	879, 190	4, 088	2, 604
Fruits, vegetables, and plants..... do.	975, 765	917, 245	1, 685, 009	1, 850, 834
Cattle..... number.	46, 814	32, 991	73, 827	87, 193
Calves..... do.	14, 844	16, 534	16, 960	17, 769
Sheep and lambs..... do.	79, 891	241, 818	357, 037	546, 644
Hogs..... do.	231, 565	261, 348	120, 064	129, 057
Horses and foals..... do.	4, 260	5, 389	26, 889	24, 826
Mules and asses..... do.	364	340		
Game and fish..... meter centners.	26, 435	31, 670	44, 050	40, 953
Animal products..... do.	185, 233	190, 733	440, 463	386, 656
Fats..... do.	163, 987	174, 973	136, 862	127, 956
Oils..... do.	156, 854	203, 269	28, 118	13, 426
Beer..... do.	32, 699	28, 120	324, 108	317, 890
Wine..... do.	20, 130	26, 263	406, 751	294, 785
Liquors..... do.	10, 778	9, 582	196, 742	140, 796
Mineral water..... do.	19, 255	20, 187	148, 737	152, 176
Eatables..... do.	164, 248	150, 216	56, 186	57, 654
Wood, coal, and turf..... do.	22, 468, 559	22, 136, 950	62, 702, 639	51, 280, 738
Materials for carving and turning..... do.	75, 180	77, 651	9, 668	12, 600
Minerals..... do.	2, 118, 231	2, 318, 604	7, 004, 079	8, 833, 412
Medicine and perfumeries..... do.	1, 257	1, 426	813	720
Dye stuffs and tanning materials..... do.	272, 555	296, 722	410, 803	484, 789
Gums and rosin..... do.	193, 948	240, 925	76, 572	81, 306
Mineral oil..... do.	1, 114, 122	1, 062, 624	21, 579	52, 924
Cotton, cotton goods, and yarn..... do.	786, 324	861, 152	154, 172	100, 742
Flax, hemp, jute, and other spinning material..... do.	486, 627	541, 190	195, 089	159, 509
Wool, woolen goods, and yarn..... do.	284, 399	316, 320	182, 294	156, 321
Silk and silk goods..... do.	12, 253	14, 832	10, 606	11, 129
Clothing and millinery goods..... do.	1, 890	2, 050	10, 020	11, 166
Brushes and sieves..... do.	1, 727	2, 294	1, 723	1, 670
Straw goods..... do.	7, 094	6, 008	2, 039	2, 568
Paper and paper goods..... do.	57, 941	60, 249	443, 487	243, 029
Caoutchouc and gutta-percha goods..... do.	5, 877	7, 199	1, 274	3, 273
Oil cloth and oiled silk..... do.	2, 140	1, 826	451	283
Leather and leather goods..... do.	44, 627	50, 584	24, 497	28, 909
Furs..... do.	2, 007	3, 080	764	772
Wood and bone-ware..... do.	199, 544	188, 382	394, 681	362, 538
Glass and glassware..... do.	30, 095	37, 284	319, 155	338, 481
Stoneware..... do.	449, 171	485, 964	829, 642	250, 041
Pearls, corals, &c..... kilograms.	22, 229	24, 015	29	1, 894
Puttery and earthenware..... meter centners.	622, 994	865, 708	378, 904	464, 132
Iron and ironware..... do.	761, 913	1, 470, 925	805, 782	308, 236
Base metals, and manufactures of..... do.	211, 038	214, 256	57, 892	63, 900
Machines, and parts of..... do.	234, 830	319, 499	63, 713	87, 772
Precious metals and coins..... kilograms.	37, 887	23, 803	62, 449	114, 725
Instruments..... meter centners.	3, 086	3, 701	2, 994	3, 021
Watches..... number of.	221, 674	245, 169	604	1, 612
Clocks..... kilograms.	181, 424	154, 382	39, 151	48, 505
Gold and silverware, meerschaum goods, fancy goods, toys, and jewelry..... kilograms.	207, 034	190, 283	3, 250, 730	3, 125, 607
Umbrellas and parasols..... number.	11, 865	11, 139	87, 138	30, 642
Salt..... meter centners.	193, 068	190, 774	142, 654	78, 000

Articles.	Imports.		Exports.	
	1885.	1884.	1885.	1884.
Chemicals.....meter centners.....	451,393	486,780	200,746	162,929
Chemical products, dye-stuffs, medicines, and perfumeries.....meter centners.....	60,827	70,747	58,594	54,167
Candles and soap.....do.....	15,635	16,441	9,940	10,415
Matches and explosives.....do.....	12,602	11,405		
Books and objects of art.....do.....	27,686	27,076	12,227	11,703
Waste of all kinds.....do.....	512,067	486,823	802,046	880,110

SCHEDULE B.—*Showing the value of declared exports from the consular districts of Austria-Hungary (agencies included) to the United States of America during the year ending December '31, 1885.*

Articles.	Value.	Articles.	Value.
Amber, crude.....	\$13,240 08	Mineral water.....	\$93,569 97
Art. works of.....	9,255 12	Meerschaum, crude.....	39,197 89
Asphaltum.....	5,997 12	Musical instruments.....	8,606 71
Bed-feathers.....	9,951 66	Oils.....	5,798 87
Beer.....	30,230 12	Ozocerite.....	19,464 50
Beet-root sugar.....	7,136 46	Petroleum barrels.....	367,432 59
Black-lead.....	5,066 67	Porcelain and pottery.....	221,553 72
Books and paper.....	84,752 51	Rags.....	5,000 37
Buttons.....	1,223,462 94	Sardines.....	34,112 80
Cloth and woollen goods.....	259,474 26	Seeds.....	20,266 64
Cuttle bones.....	10,774 57	Silks and velvets.....	232,764 22
Drugs and chemicals.....	132,875 93	Smokers' articles.....	83,458 55
Fancy goods and jewelry.....	193,099 34	Sponges.....	11,564 05
Fans.....	140,839 13	Tartar, crude.....	303,308 63
Fruits, dried.....	1,557,984 29	Toys.....	9,269 84
Furniture.....	79,867 61	Umbrella fixtures.....	7,687 29
Glassware.....	934,553 14	Wines and liquors.....	62,695 84
Gloves.....	85,124 54	Wool.....	27,679 72
Gum.....	147,307 45	Miscellaneous.....	77,095 82
Hair, human.....	17,582 38		
Hops.....	22,657 85	Total in 1885.....	7,155,987 62
Insect powder.....	94,197 40	Total in 1884.....	7,180,885 40
Iron and steel manufactures.....	881 71	Total in 1883.....	8,723,797 25
Leather and skins.....	83,750 24	Total in 1882.....	8,708,126 79
Lentils and beans.....	7,695 80	Total in 1881.....	7,501,060 97
Linen and cotton goods.....	417,702 48		

AUSTRIA.

REPORT OF VICE-CONSUL HÜNING ON BEET-ROOT SUGAR.

A direct shipment of beet-root sugar was made a few weeks ago from this consular district to the United States, the first one of this kind. As this industry is of the greatest interest to America, I applied to the chamber of commerce, to the board of trade, and to other official sources for information on this subject, the result of which I submit herewith.

There are few countries in Europe of the same extent and population for which the beet-root-sugar industry has equal importance and significance as Bohemia, not alone on account of the prominent position which this branch of industry occupies, but also on account of its bearing on the rational cultivation of agricultural lands, the breeding of cattle, the adoption of machinery, and the opening of new communications. Statistics show that the prosperity and decline of the Bohemian sugar industry affects to a greater or less extent the banking institutes, the coal-mining interest, and the spirit manufactories. The Bohemian

sugar industry is greater than that of all the other provinces of the Empire, Hungary included, taken together.

Official statistics show that during the campaign 1883-'84 the entire number of sugar factories in Austria-Hungary was 230, of which 152 were located in Bohemia; and that of the entire quantity of 41,845,679 metrical centners of beets on which a tax was levied before they were manufactured into sugar, 26,178,845 metrical centners fell to the share of Bohemia alone.

The following table shows the quantity of beets converted into sugar, the Government tax levied, and the number of factories in Bohemia during the last ten years:

Year.	Number of factories.	Quantity of beets.	Amount of tax.	Average amount of each factory.	
				Quantity.	Tax.
		<i>Met. cent.</i>	<i>Florins.</i>	<i>Met. cent.</i>	<i>Florins.</i>
1874-'75	145	5,344,100	3,907,434	36,856	26,948
1875-'76	150	8,581,660	6,263,352	57,211	41,756
1876-'77	149	9,725,560	7,099,654	65,272	47,649
1877-'78	152	15,297,910	11,167,474	100,644	73,470
1878-'79	151	17,619,500	12,862,230	116,685	85,180
1879-'80	150	18,266,150	13,334,227	121,774	88,893
1880-'81	152	28,081,910	22,463,210	184,747	147,797
1881-'82	155	28,827,110	22,861,685	182,756	146,234
1882-'83	154	31,968,280	25,574,626	207,586	166,069
1883-'84	152	26,178,845	20,943,076	172,229	137,782
Average	151	18,939,062	14,627,897	125,424	96,872

Exports of sugar from Bohemia on which the Government bounty was paid.

[In metrical centners.]

Year.	Refined.	Powdered.	Total.
1875	38,695	446,981	485,676
1876	114,387	763,365	877,752
1877	99,979	850,669	950,648
1878	120,892	745,154	866,046
1879	136,448	1,219,751	1,356,199
1880	167,775	1,481,559	1,649,334
1881	269,897	1,589,370	1,859,268
1882	316,095	1,101,564	1,417,659
1883	464,930	1,257,373	1,722,303
1884	467,564	1,532,534	2,020,098
Average	219,666	1,100,832	1,320,498

The bounty paid by Government in 1884 for sugar exported from the countries represented in the Reichsrath amounted to 23,313,468 florins, for sugar exported from Hungary to 1,011,877 florins, and from Bohemia alone to 19,977,076 florins, of which sum 5,400,372 florins was for refined and 14,576,734 florins for powdered sugar, while in 1883 the amount paid for bounties for exports from Bohemia was 17,184,482 florins.

During the campaign 1884-'85 there were in operation in the entire Austrian Empire 249 sugar factories, of which number 165 were situated in Bohemia. Of these latter 50 were owned by joint stock companies, 3 by large corporations, 2 by the Bohemian Sugar Industrial Society, 60 by the nobility, 3 by the Emperor, and the rest by private parties.

Machinery employed by the sugar factories of Bohemia and of Austria-Hungary during the campaign 1883 to 1884.

Items.	Bohemia.	Entire Empire.
Total number of factories	152	220
Number of steam-boilers	1,223	1,913
Heating surface in square meters	91,348	157,273
Motive power:		
Steam horse-power	16,334	25,809
Water	26	31

Quantity of beets converted into sugar, and the expenses of manufacture and fuel, during the campaign 1883 to 1884.

Items.	Bohemia.		Entire Empire.	
	Quantity.	Average price per metrical centner.	Quantity.	Average price per metrical centner.
Fresh beets used	<i>Met. cent.</i> 23,173,169	<i>Kreuzers.</i> 100-200	<i>Met. cent.</i> 41,845,679	<i>Kreuzers.</i> 95-200
Manufactured sugar	619,964		765,844	
Molasses	1,336,840		1,383,880	
Fuel:				
Coal	12,195,702	80-190	17,831,151	28-180
Charcoal	235	190-400	295	190-400
Cokes	87,414	120-175	118,444	103-175
Wood	155	360-500	18,125	200-500
S podu-mene	229,609	72-20	365,897	11-20

During the campaign of 1883-'84 the number of persons employed in the sugar manufactories of Bohemia was 30,580 males and 11,332 females, and in those of the entire Empire of Austria-Hungary 46,683 males and 20,024 females, whose daily wages average from 35 kreuzers to 1 florin; 80 kreuzers per day for males, and from 20 kreuzers to 1 florin 20 kreuzers for females.

The Government tax on beets for the same period of time amounted to 20,942,535 florins for Bohemia and to 33,476,543 florins for the entire Empire.

The extraction of the juice in the 152 factories of Bohemia took place by means of what is known as the diffusion process, while the old method of employing grinding and powerful pressure was adopted by twelve factories situated in other parts of the empire.

When sugar first became an article of export the Government paid a certain bounty or drawback, which in 1860 was 5.16 florins on the centner of refined and 4.20 florins on powdered sugar. In 1864 the bounty was increased to 6.51 florins on refined and 5.30 florins on powdered sugar, and the bounty paid at present is 8.40 florins on the metrical centner of sugar containing from 88 to 92 per cent. of saccharine matter; 9.40 florins on the metrical centner of sugar containing from 92 to 99½ per cent. of saccharine matter, and 11.55 florins on the metrical centner containing more than 99½ per cent.

The financial calamities caused by the crisis in the sugar trade in the fall of 1884, the unforeseen collapse of the Bohemian "Boden-Credit-Anstalt," which caused the closing of a number of sugar factories depending entirely upon that institution for support, and the consequent lack of faith on the part of the Bohemian and Moravian growers, ren-

dered a further existence of this branch of industry for some time extremely doubtful. A long time was required before matters became more settled and confidence restored, and even now it has not yet entirely recovered. It is now admitted on all sides that the crisis was caused by an excessive cultivation of beets and an irrational overproduction of sugar in Bohemia and other sugar-producing countries of Europe, and that the gradual improvement is due solely to the movement in favor of a reduced cultivation of the sugar beet.

The prospect, however, that the Bohemian sugar industry will fully recover from the disastrous blow it had been made to feel, is made problematical by the fact that this branch of its industry is confined almost to export alone, and that foreign legislation, repeated increases in the rates of tariffs and customs, as well as obstacles in the means of communication and transportation, all tend towards driving the Bohemian sugar from foreign markets without opening new fields, and home consumption being as yet far too little developed in proportion to the number of population to make it remunerative, the more so as the frugality of the people is proverbial and not likely to undergo a sudden change.

The consumption of sugar in Austria is calculated to average 6 kilograms for every inhabitant per year, but in Bohemia, where coffee is in great demand, it is a fraction over 6 kilograms.

From the following statement, compiled from official statistics furnished me for this purpose, may be learned the actual present condition of the beet-root sugar industry of Bohemia and of Austria-Hungary during the campaign of 1885-'86:

Items.	Bohemia.	Entire enterprises.
Factories in operation	139	214
Factories closed*	11	14
Refineries in operation	11	15
Refineries closed	2	3
Extraction of juice by diffusion	139	203
Extraction of juice by pressure		11
Exclusively powdered sugar	107	144
Refined and powdered	18	25
Exclusively refined sugar	22	44
Exclusively pilé	3	6
Molasses	150	229

*There are six factories aside from these where resumption of business is doubtful, but likely they will remain closed.

Table showing the average price of the metrical centner of sugar in Austrian currency and the London rate of exchange, during the ten years from 1876 to 1885.

Description, &c.	1876.	1877.	1878.	1879.	1880.	1881.	1882.	1883.	1884.	1885.
Powdered sugar; basis 88 per cent., at Bohemian railroad station	28.05	45.12	31.43	29.90	36.00	33.92	33.60	30.65	28.77	19.43
1a. Centrifugal, pilé; free transit, Trieste	30.25	44.50	32.00	30.00	33.37	31.00	32.00	29.25	27.25	17.35
Fine brod molasses, from Vienna railroad station	43.00	61.50	44.50	42.50	47.12	42.50	46.00	43.12	41.00	30.87
London rate of exchange	113.06	125.53	120.12	117.20	116.92	117.74	118.93	119.44	121.06	123.49

TOTAL AVERAGE DURING THE TEN YEARS.

Powdered sugar, basis 88 per cent., at Bohemian railway station	31.63
1a. Centrifugal pilé, free transit, Trieste	30.69
Fine brod molasses, from Vienna railway station	44.21
London rate of exchange	119.84

The greater part of the sugar exported from Bohemia is sent by way of the river Elbe to Hamburg, and from there to England.

Other markets are Holland and France, though legislation in these two last-mentioned countries has seriously injured the trade of late; the export to Italy has also suffered in consequence of the higher rates of duty imposed, the gradual development of domestic production, and the competition made by Russia. The chief markets for Bohemian sugar are the Balkan States, Servia, Roumania, Bulgaria, and Greece, Turkey, and the Levant, where it not only occupies the first position, but has even succeeded in driving its rivals and competitors, England and France, almost entirely from these markets, and it is only quite recently that Russia begins to boom up as a competing power. Some shipments even found their way to Persia, to ports of the Red Sea, and to Ceylon as well as to Tunis and Morocco. Several attempts have been made to gain a foothold in the markets of the West, and several shipments were made to Spain, to the La Plata States, and other South American countries, and one to the United States, but there is not the slightest doubt that a great deal of the "German sugar" shipped from Hamburg to the United States is Bohemian product; and as soon as the investigations I am now making to find out this proportion have placed me in possession of the necessary information, I shall immediately place it at your disposition.

WILLIAM HÜNING,
Vice-Consul.

UNITED STATES CONSULATE,
Prague, Bohemia, February 6, 1886.

FRANCE.

REPORT OF CONSUL DUFAIS ON THE FOREIGN TRADE OF FRANCE, 1885.

[Published by the French custom-house authorities for the year ending December, 31, 1885.]

Imports.	1885.	1884.	Imports.	1885.	1884.
	<i>Francs.</i>	<i>Francs.</i>		<i>Francs.</i>	<i>Francs.</i>
January	307,950,000	274,629,060	August	326,173,000	319,205,000
February	409,448,000	442,424,000	September	319,472,000	350,531,000
March	443,222,000	425,952,000	October	298,977,000	352,496,000
April	388,117,000	450,505,000	November	332,288,000	353,218,000
May	281,681,000	239,200,000	December	421,288,000	404,707,000
June	362,064,000	377,277,000			
July	324,617,000	323,335,000	Total	4,215,877,000	4,343,479,000

These imports consist of the following principal elements :

Elements.	1884.	1885.	Decrease, 1885.
	<i>Francs.</i>	<i>Francs.</i>	<i>Francs.</i>
Articles of food	1,414,155,000	1,380,468,000	33,687,000
Raw material	2,105,147,000	2,055,420,000	49,727,000
Manufactured articles	931,758,000	588,065,000	43,693,000
Miscellaneous	192,419,000	191,324,000	1,095,000
Total	4,343,479,000	4,215,877,000	127,602,000

In analyzing these figures it will be seen that until the month of August last year the relative condition of trade was favorable; in fact the month of August was particularly so; after that the condition began to change for the worse, and December ended badly. No doubt the parliamentary and presidential elections had an unfavorable influence on trade, but the principal reason of the decline is to be found in the great depression of the sugar and agricultural interests.

Raw materials show a decrease of 49,727,000 francs, principally in silk, timber, guano, and coal, viz: Silk loses 37,133,000 francs (on a total of 268,628,000 francs in 1884); timber, 20,000,000 francs; guano and coal, 17,783,000 francs; manufactured goods lose 43,093,000 francs; articles of food lose 33,637,000 francs, particularly owing to a decrease of 107,000,000 francs in the purchase of breadstuffs abroad, which is only partially made up by an increased import of sugar, 21,000,000 francs; raisins, 28,000,000 francs; oily substances, 19,000,000 francs; meat, 10,000,000 francs.

The increase in the imports of raisins of 28,000,000 over and above the total import in 1884 of 49,000,000, thus making the import 77,000,000 in 1885 is remarkable, and shows how the manufacture of wines from this source has increased. There is also an increase in the import of the following articles: in oil seeds, 24,836,000 francs; skins and furs, 18,231,000 francs; mineral ore, 3,639,000 francs; dye woods, 2,878,000 francs; cotton, 12,784,000 francs; jute, 2,988,000 francs; wool, 4,595,000 francs; but a decrease in flax, 2,833,000 francs; in hemp, 1,545,000 francs; in silk, 37,133,000 francs.

Of silk, however, there was 26,532,000 francs less re-exported, so that in fact the consumption has only decreased 10,500,000; of machinery the decrease is 15,000,000 francs; of cotton goods, 7,624,000 francs; of worsted goods, 5,600,000 francs; of manufactured skins, 4,000,000 francs; of nitrate of soda and potash, 4,000,000 francs.

Worsted thread, however, increased 5,600,000 francs; cotton thread, 1,420,000 francs; and silk goods, 2,171,000 francs.

Exports.

Months.	1885.	1884.	Months.	1885.	1884.
	<i>Francs.</i>	<i>Francs.</i>		<i>Francs.</i>	<i>Francs.</i>
January.....	156,275,000	160,224,000	August.....	286,876,000	225,839,000
February.....	233,554,000	235,444,000	September.....	240,421,000	290,657,000
March.....	343,679,000	306,639,000	October.....	300,546,000	301,275,000
April.....	325,251,000	342,313,000	November.....	285,792,000	314,180,000
May.....	235,848,000	209,575,000	December.....	294,964,000	361,241,000
June.....	263,621,000	267,945,000			
July.....	218,209,000	217,168,000	Total.....	3,185,031,000	3,232,500,000

The exports consist of the following heads:

Classes of products.	1885.	1884.
	<i>Francs.</i>	<i>Francs.</i>
Articles of food.....	713,442,000	782,414,000
Raw material.....	602,524,000	660,075,000
Manufactured goods.....	1,629,743,000	1,637,988,000
Miscellaneous.....	179,322,000	163,023,000
Total.....	3,185,031,000	3,232,500,000

The loss in exports is thus 47,469,000 francs, and of this falls on refined sugar 22,066,000 francs; home-grown sugar, 8,340,000 francs; butter, 7,361,000 francs; cattle, 6,085,000 francs; breadstuffs, 9,000,000 francs.

The export of wines remained stationary at 237,000,000 francs.

The principal loss in exports of raw material is in silk, which fell from 155,000,000 francs in 1884 to 128,000,000 francs in 1885.

The re-exportation of cotton loses 3,303,000 francs, and of skins and furs in the unprepared state 260,000 francs, caused by prohibitory sanitary measures; 4,000,000 were lost in feathers of fashion, 4,000,000 on oil-cake, and 3,000,000 on seed grain.

On the other hand the export of wool increased 12,650,000 francs, of horses and mules, 6,578,000 francs, and of rags, 11,560,000 francs, the export of which latter had suffered seriously in 1884, owing to the prevalence of cholera, and of which, therefore, stocks had largely accumulated.

The following table will show more clearly the exports of the principal articles:

Articles.	1885.	1884.
	<i>Francs.</i>	<i>Francs.</i>
Silk goods	233,315,000	238,822,000
Prepared skins	107,337,000	109,777,000
Jewelry	52,566,000	74,582,000
Machinery	27,093,000	31,804,000
Artistic hardware and toys (bimbeloterie)	89,580,000	91,771,000
Articles of fashion and artificial flowers	26,979,000	27,687,000
Dresses and linens	63,803,000	74,879,000
Payence and china	9,238,000	11,088,000
Perfumery	8,041,000	10,152,000
Dye-wood extracts	13,707,000	16,837,000
Tartrates	14,756,000	1,697,000
Other chemicals	40,127,000	43,261,000

The most serious loss in exports is in the article of jewelry, 22,016,000 francs, and next to that in dresses and ready-made linen goods, 11,076,000 francs, showing how the lack of prosperity abroad has affected these important branches of trade.

The exports of the following articles show an increase:

Articles.	1885.	1884.
	<i>Francs.</i>	<i>Francs.</i>
Worsted goods	347,288,000	334,294,000
Cotton goods	98,780,000	91,015,000
Linen and hemp goods	14,178,000	14,135,000
Worsted thread	40,212,000	82,291,000
Linen and hemp thread	9,310,000	5,538,000
Manufactured hides	133,065,000	181,185,000
Watches and clocks	19,608,000	16,910,000
India-rubber goods	7,731,000	6,588,000
Furniture and woodenware	26,736,000	25,540,000
Glass and crystal	19,553,000	11,581,000
Soap	8,109,000	7,353,000

Taking the exports of French manufactures, they show a small loss of 8,000,000 only, compared with 1884, but it must be remembered that last year was very unfavorable, and only three years ago, in 1882, they amounted to 1,856,667,000 francs, from which they declined last year to 1,629,743,000 francs, or a loss of 226,924,000 francs, and that for the last ten years they never were so low.

What remedies to apply to this loss of trade is at present the all absorbing question; the French Government has taken up seriously and an official circular has been addressed by it to the different chambers of

commerce requesting them for their opinions. It is even proposed to invite them to come together for consultation.

At the last change of Government the minister of commerce, Mr. Lockroy, replacing Mr. Dautresme, took the title of minister of commerce and industry (adding the latter word), which is considered of good augury. He is one of the deputies of the city of Paris, and being well conversant with its industry, representing about one-third of the manufacturing interest of the whole country, great expectations are entertained of his administration.

F. F. DUFAIS,
Consul.

HAVRE, FRANCE, *February 4, 1886.*

GENERAL STATISTICS OF FRANCE.

REPORT OF CONSUL-GENERAL GEORGE WALKER.

SEA FISHERIES.

The products of this industry amounted to \$16,976,497, in 1884, a decrease of \$3,725,440, as compared with 1883.

The quantities and kinds of fish caught, the number of vessels and men employed, during the years 1883 and 1884, were as follows:

Articles.	1883.	1884.
Cod, Newfoundland	46,993,370	55,834,497
Cod, Iceland	28,841,701	24,677,034
Herring	81,249,480	101,853,418
Mackerel	14,624,227	5,943,135
Sardines	1,148,375,978	411,819,005
Anchovies	4,918,117	11,400,603
Other kinds	116,876,576	118,457,784
Oysters	157,666,246	119,277,295
Mussels	1,641,865	1,565,575
Other shell-fish	828,079	1,043,287
Crustaceans	1,712,885	1,927,229
Prawns	2,902,865	3,466,644
Vessels employed	22,866	24,538
Tonnage of vessels employed	151,825	162,467
Men employed	82,324	87,179

OUTPUT OF COAL.

The output of coal in France during the year 1884 was 20,128,209 tons, viz:

Pit coal and anthracite	19,624,718
Lignite	503,491
Total for 1884	20,128,209
Total for 1883	21,446,199
Decrease for 1883	1,317,990

There were imported into France during 1884 9,385,670 tons of pit coal, being a decrease of 127,588 tons, as compared with 1883. In this importation England figured to the amount of 3,798,368 tons, and Belgium to the amount of 4,356,298 tons.

The exportations were about 451,949 tons, an increase of 13,515 tons over 1883.

There were three hundred and eight coal mines under work. The total number of persons employed was 111,317; the number of men being

71,471 below ground, and 27,523 above ground; the number of children 5,241 below ground and 2,849 above ground; the number of women 8,963 above ground.

IRON AND STEEL.

The total production of castings during the year 1884 reached the figure of 1,855,247 tons; in 1883 it was 2,067,387 tons.

The production of iron during 1884 was 377,826 tons; in 1883 it was 968,068 tons.

The production of steel in 1884 was 509,516 tons; in 1883 it was 454,053 tons.

CEREALS.

The wheat production of France for the year 1884 was 315,363,485 bushels, an increase of 20,965,548 bushels over the year 1883, and of 12,699,240 bushels over the average production for the last five years. The area sown was 17,239,174 acres, and the production by acre 18.30 bushels.

From 1876 to 1883 the average yearly production of wheat has been 16,599,682,300 pounds; the average yearly importation for the same period being 2,774,069,380 pounds; the total, viz, 19,373,751,680 pounds, represents the annual consumption of wheat in France.

During the same period the average importation from the United States was 1,284,024,978 pounds.

The average yearly market prices for wheat in France, from 1871 to 1884, were as follows:

Year.	Price per 100 pounds.	Year.	Price per 100 pounds.
1871.....	\$2 95	1878.....	\$2 62
1872.....	2 67	1879.....	2 47
1873.....	2 93	1880.....	2 62
1874.....	2 79	1881.....	2 52
1875.....	2 09	1882.....	2 42
1876.....	2 84	1883.....	2 17
1877.....	2 62	1884.....	2 12

The following statement shows the average area sown and the average yield for wheat, rye, and barley in France at different periods since 1815:

Periods.	Wheat.		Rye.		Barley.	
	Area sown.	Average yield per acre.	Area sown.	Average yield per acre.	Area sown.	Average yield per acre.
	<i>Acres.</i>	<i>Pounds.</i>	<i>Acres.</i>	<i>Pounds.</i>	<i>Acres.</i>	<i>Pounds.</i>
1815 to 1885.....	12,247,495	774	6,641,388	659	3,043,606	784
1830 to 1885.....	14,374,351	890	6,324,924	731	3,022,218	917
1855 to 1875.....	16,844,365	980	4,883,189	830	2,735,672	1,069
1876 to 1884.....	17,064,902	974	4,459,424	858	2,509,684	1,083

The maize production in France is of little importance, being not more than 25,000,000 bushels a year, and as that product is now extensively used for feeding horses and for manufacturing alcohol, its importation into France has greatly increased during the last ten years. In 1874 the importation amounted to 2,000,000 bushels; it reached 10,000,000 bushels in 1884.

The following statement shows the area under each cereal crop, and the yield for each cereal, for the year 1884.

	Acres.	Bushels.
Wheat.....	17, 229, 174	315, 363, 485
Maslin (wheat and rye).....	880, 892	16, 909, 253
Rye.....	4, 275, 515	74, 501, 188
Barley.....	2, 613, 245	55, 165, 504
Oats.....	9, 136, 088	249, 922, 829
Buckwheat.....	1, 563, 329	30, 015, 114
Maize.....	1, 523, 872	27, 688, 325
Millet.....	104, 257	1, 880, 380
Potatoes.....	3, 498, 792	423, 664, 308

WINE.

The production of wine for the year 1885 was 753,839,501 gallons, a decrease of 164,962,938 gallons, as compared with the year 1884, and a diminution of 361,182,794 gallons, as compared with the average production for the last ten years.

The following exhibit shows the production, the importation, and the exportation of wine from 1876 to 1884, inclusive :

Year.	Production.	Importation.	Exportation.
	Gallons.	Gallons.	Gallons.
1876.....	1, 105, 472, 379	17, 857, 892	87, 975, 027
1877.....	1, 400, 050, 885	18, 676, 819	81, 925, 534
1878.....	1, 287, 273, 993	42, 346, 451	83, 835, 515
1879.....	680, 766, 090	77, 613, 146	80, 472, 599
1880.....	783, 713, 139	190, 704, 323	65, 725, 496
1881.....	901, 849, 963	207, 082, 863	67, 944, 524
1882.....	815, 915, 502	199, 104, 929	69, 159, 706
1883.....	951, 782, 000	237, 245, 609	67, 061, 694
1884.....	918, 802, 439	214, 706, 881	65, 296, 616

CIDER, BEER, AND ALCOHOL.

The product of this article for 1884 was 314,551,895 gallons, being a decrease of 306,043,349 gallons, as compared with the year 1883, but still an increase of 6,883,451 gallons on the average production for the last ten years.

The production of beer during 1884 was 224,174,556 gallons, being a diminution of 3,337,695 gallons, as compared with 1883. The importation amounted to 10,070,874 gallons, and the exportation to 1,032,139 gallons.

The following statement shows the quantities of alcohol produced in France, and the quantities imported and exported, during the five years ended September 30, 1884 :

Items.	1880.	1881.	1882.	1883.	1884.
	Gallons.	Gallons.	Gallons.	Gallons.	Gallons.
Produced from wine, cider, and fruits ..	130, 209	1, 633, 601	1, 463, 422	1, 014, 713	604, 157
Produced from farines and potatoes ..	10, 190, 855	13, 374, 214	11, 810, 143	14, 844, 558	13, 389, 615
Produced from beets ..	8, 283, 446	14, 879, 111	14, 689, 331	16, 642, 857	16, 072, 605
Produced from molasses ..	18, 754, 388	18, 112, 710	18, 597, 277	10, 529, 578	20, 308, 095
Produced from other substances ..	311, 113	113, 303	107, 200	193, 505	336, 579
Total production ..	37, 669, 711	48, 112, 939	46, 667, 373	53, 125, 011	50, 711, 051
Importation ..	7, 450, 830	6, 246, 062	7, 204, 312	4, 143, 744	4, 808, 660
Exportation ..	9, 013, 030	7, 216, 781	7, 089, 398	7, 006, 343	6, 889, 897

SUGAR AND TOBACCO IN FRANCE.

SUGAR.

The quantity of refined sugar produced in France during the year 1884 amounted, to 694,941,212 pounds, being a decrease of 166,492,188 pounds, as compared with 1883. The quantities of sugar entered for consumption during the year 1884 were as follows:

Items.	Quantity.
	<i>Pounds.</i>
Sugar-cane from French colonies	162,583,016
Sugar-cane from foreign countries	84,845,115
Beet-root sugar from foreign countries	197,818,517

TOBACCO.

The latest official returns concerning this article give the following information for the year 1883:

Items.	Quantity.	Value.
	<i>Pounds.</i>	
Leaf tobacco delivered by French planters to the Government monopoly	40,786,000	\$2,908,000
Leaf tobacco and cigars bought in foreign countries	88,895,000	9,748,000
Manufactured tobacco sold to consumers	78,857,000	
Receipts		71,892,500
Expenses		18,307,350
Net profit		\$5,585,150

The imports into France from the United States, almost entirely consisting of leaf tobacco during the year 1883, amounted in quantity to 36,212,842 pounds, and in value, as estimated by the French customs at 10½ cents per pound, to \$3,804,235. The imports from all other countries amounted to 41,709,234 pounds, their estimated value being \$4,381,643.

In 1884 the quantity of leaf tobacco imported from the United States into France amounted to 27,389,958 pounds; the value, as estimated by the French customs at 11 cents per pound, was \$3,012,895. The imports from all other countries amounted to 26,472,400 pounds, their estimated value being \$2,911,964.

FRENCH REVENUE.

The product of State taxes in France for the year 1884 amounted to \$541,219,371, which is a deficit of \$9,873,401 on the estimates for the year.

The direct taxes, viz, taxes on public lands, forests, real estate, houses, apartments, billiards, &c., produced a sum of \$80,228,989, a surplus of \$729,768 on the estimates for the year.

The indirect taxes, which comprise stamps, registration, excise, post-office, &c., realized in the year for France and Algeria a sum of \$451,916,680, a deficit of \$10,002,939, on the estimates for the year.

The income tax of 3 per cent. on interests and dividends produced \$9,073,702, a deficit of \$600,230 on the estimates for the year.

RAILWAYS OF EUROPE.

The following exhibit, prepared from a report of the French department of public works, shows the total number of miles of railways in operation in France and in the other countries of Europe at the close of the year 1884 :

Countries.	Miles.	Countries.	Miles.
Austria-Hungary	13, 736	Roumania	995
Belgium	2, 684	Russia	15, 777
Denmark	1, 208	Servia	152
France	19, 897	Spain	5, 333
Germany	22, 627	Sweden and Norway	5, 072
Great Britain and Ireland	18, 961	Switzerland	1, 716
Greece	109	Turkey, Bulgaria, and Roumelia	896
Italy	6, 167		
Netherlands	1, 649	Total	117, 648
Portugal	949		

MARSEILLES.

REPORT OF CONSUL MASON ON AMERICAN GRAPE-VINES IN SOUTHERN FRANCE.

It is about fifteen years since it became apparent that the vineyards of a large portion of France were doomed to destruction by phylloxera, and that, except in a few locations where the nature of the surface and water supply might enable vine-growers to submerge their lands, the only really effective remedy lay in the replacement of the perishing vines with strong, hardy roots from the United States. This experiment has been tedious, complicated, and costly, but it has now reached a stage which promises substantial success. It is proposed in this report to give, in reply to many inquiries from American horticulturists, a succinct record of the experience of wine-growers in this consular district with imported vines, to state what has been proven, what remains still to be decided, and what varieties of American grapes have proven most successful under the new conditions of soil, climate, and culture which prevail in Southern France.

At the close of 1884 fifty-three departments, containing 6,214,572 acres of vineyards had been invaded by the phylloxera. Of this whole area 2,511,540 acres had been wholly or partially destroyed. Among these stricken departments were included prominently those of Hérault, Ardèche, Bouches-du-Rhône, Var, Aude, Pyrénées-Orientales, Gard, and Vaucluse, which constitute the consular district of Marseilles. It is to these departments, particularly Hérault, Gard, Var, Aude, and Vaucluse, which are largely devoted to wine culture, that this inquiry will especially relate. In these five departments there were growing at the close of 1884 100,692 acres of American vines; 83,615 acres had been treated by the sulphide-of-carbon process, which has so generally failed as to be now practically abandoned, and 58,237 acres had been saved, at great expense, by immersion with water, which when thoroughly applied drowns and destroys the parasite.

Even before the invasion of the phylloxera, which began in various detached localities from 1864 to 1870, numerous experiments had been made with grape roots of different kinds, imported from the United States as resistant to the oïdium, a disease which seriously threatened

the French vineyards thirty years ago, but which was happily cured and eradicated by treatment with sulphur. By reason of the appearance of phylloxera within a few years after this introduction of American vines, many European writers have inferred that the pestilent insect was introduced here by those hardy importations from the New World, but this theory has been abundantly disproven by the highest authorities, upon evidence that is impregnable. The phylloxera appeared simultaneously in districts where no American vine had ever been planted, and others, where many of these imported vines had been growing for years, were spared long after the first invasion.

It was soon noticed that in vineyards thus attacked the native vines perished, while American varieties, notably the Clinton and Concord, growing in adjacent rows, retained their ordinary health and vigor. Investigation showed that the roots of these imported vines, derived from the wild, luxuriant species indigenous to our forests, have a different quality and texture from those of European varieties. This difference became most obvious in presence of the phylloxera. When stung or bitten by the insect, the European root rots and perishes as from a deadly poison, while the hardier American racine shows simply knots or blotches on its surface, which in most cases do not seriously affect the health of the plant. If the phylloxera attacks its leaves, small excrescences appear on their under surfaces, but the injury is usually not serious. It is not meant by this that all American vines have successfully resisted the pest. On the contrary, some varieties, after a few years of trial, have weakened and become nearly or quite as vulnerable to phylloxera as the native roots which they had replaced. Others have proved successful resistants, but years were required to demonstrate this.

The carbon remedy having substantially failed, the American vines were promptly recognized as the one available resource, and the French wine-growers, demoralized by ruinous losses, entered upon the experiment with a headlong enthusiasm which for a time overlooked many obstacles and difficulties which afterward became serious. Hundreds of thousands of roots and cuttings were imported from the United States and planted indiscriminately wherever they were needed. Instead of experimenting on a small scale with different varieties to ascertain their fitness for new conditions of soil and climate, many farmers planted whole vineyards with the Clinton, the Concord, the Taylor, and Norton's Virginia, all of which showed for a time great promise, but eventually, in certain locations, languished, became weak, uncertain growers, and had to be abandoned.

It was thus discovered, to the great cost and disappointment of many cultivators, that the American vines are, almost without exception, far more capricious and exacting in their requirements than the standard European varieties, such as the Aramont, the Chasselas, and the Clairette. The climate of Southern France is totally different from that of any part of the United States, except certain portions of California. Instead of the rank, virgin soil to which our native varieties are accustomed, they find here fields worn and fatigued by centuries of culture. These natural difficulties were aggravated by the short, close pruning to which the French farmers were accustomed, and which they continued to practice upon their American vines, to the great injury of the plants and detriment to their crop. They required several years of varying success and failure to outgrow this error and to learn that for every variety of soil, exposure, and degree of moisture there are one or two American vines better adapted than all others, and that

each wine-grower must determine for himself, by actual experiment, which is best suited to his purposes.

THE GENESIS OF AMERICAN GRAPES.

There are, according to the best authorities, not less than seventy-two more or less distinct species of grape-vine indigenous to North America. Seventeen of these have been subjected to culture, and have each produced several varieties more or less valuable. The varieties which have proved most effective, either for direct production of wine in this country or as stocks for grafting with European grapes, belong mainly to five species, and are as follows:

Species.—The Fox grape (*Vitis labrusca*), native of Pennsylvania and Florida. Varieties: Isabella, Concord, Diana, York's Madeira, Eumelan, Hartford Prolific.

Species.—The Summer grape (*Vitis æstivalis*), native of Virginia, the Carolinas, and Gulf States. Varieties: Jacquez, Herbemont, Alvey, Norton's Virginia, Cynthiana, Lenoir, Hermann.

Species.—The Winter grape (*Vitis cordifolia*), native of Pennsylvania and Florida. Varieties: Clinton, Vialla, Othello, Oporto, Franklin.

Species.—Round-leaved vine (*Vitis rotundifolia*), native of Virginia, the Carolinas, and Florida. Varieties: Scuppernong, Flowers, Thomas, Tenderpulp, Wish, Richmond.

Species.—Riverside grape (*Vitis riparia*), native of the Ohio Valley. Varieties: R. Glabra, Tomenteux, and several others.

All of these varieties may now be said to have been thoroughly tested within the territory of this district, and the result in each case has been reported at the meetings of the agricultural societies of the Gard, Hérault, and Bouches-du-Rhône. It is to the records of these associations and to the published reports of Mr. Felix Sahut, vice-president of the society of Hérault, confirmed by observation and inquiry of the leading wine-growers in the several departments, that the facts included in this report have been derived.

The value of each of the foregoing varieties depends upon three essential requirements: (1) Does the vine permanently resist phylloxera? (2) Does it produce *directly* a good wine? Or (3) is it serviceable as a stock for grafting with other varieties?

Of the direct producers, in other words, the American vines which yield marketable wines without grafting with other varieties, the most important are as follows:

(1) The Clinton, which, as already indicated, was one of the earliest varieties to be essayed in the vineyards of Southern France, for the reason that it was one of the most widely grown and most successful grapes in the United States. In a few instances, where the soil is exceptionally favorable, the Clinton has achieved excellent success, both as a direct producer and grafting stock, but the vine on the whole has proved too fastidious, and in many cases, after growing vigorously three or four years, it has degenerated and ceased to bear, except a few small clusters. When such vines have been grafted they have succeeded in producing as high as 540 to 600 gallons of wine per acre, which is considered a satisfactory result. But the Clinton is no longer a favorite in this region.

(2) The Concord also began with great promise as a direct producer. Although its wine had the peculiar "foxy" flavor so disagreeable to the French taste, it was adopted here by reason of its fine, luxuriant growth and its high reputation in the United States. Like the Clinton,

it finally degenerated, except in a few specially favored localities, and is now only mentioned by experts as a *souvenir*.

By far the most important and successful direct producer, of American origin, is—

(3) The Jacquez, which is known in Texas and Alabama as the Lenoir and Black Spanish, and in the Northern States under the name of Ohio. The Jacquez is a hybrid, which is now thought to have been originally introduced into the United States from Spain by a Spaniard named Jacquez, who cultivated it in the neighborhood of Natchez. It seems to have been subject in our country to mildew and black canes, and for that reason has not been extensively grown there. Brought back to the hot, dry climate of Southern France, it has shown extraordinary qualities, both as a grafting stock and a direct wine-producer. It is perhaps due to its remote European origin that the Jacquez is more vulnerable than most other American varieties to the phylloxera, and it requires therefore careful attention. But its exceeding vigor, its long searching roots, its vigorous growth of stem and foliage, the quantity and excellence of its product, combine to give it a front rank, both as a direct producer and as a stock for grafting. Some complaint has of late been heard that the wine of the Jacquez deteriorates after some years of its growth in white, marly soils, but even there this defect can be overcome by judicious grafting.

(4) The Herbemont ranks probably next after the Jacquez as a rapid, thrifty grower, but it bears but sparingly, and has therefore been grafted with the Carignan, and in this condition produces an excellent wine, although its clusters ripen tardily and require a long, bright autumn to reach their full maturity. It is, moreover, somewhat "difficile" in its choice of soils, and although it has attained an excellent reputation in the west of France, cultivators in the Mediterranean region concede that it has, on the whole, hardly fulfilled expectations. It is therefore placed in the list of vines which only develop their best qualities under exceptionally favorable conditions of soil and exposure.

(5) The Cunningham or Long grape, a native of Georgia, and a remarkably luxuriant grower, shows a great adaptability to thin, dry soils, and has been largely planted along the arid hill-sides of the Gard and Bouches du-Rhône. But it bears but sparingly, its wine is weak in alcohol, and it has therefore been generally abandoned as a direct producer, and utilized as a grafting stock for the Chasselas, the Clairette, and the Aramont.

(6) The Isabella was largely planted ten or fifteen years ago, but it proved almost as vulnerable to phylloxera as the native vines, and as its wine evinced a rank, "foxy" flavor, its culture was soon abandoned. The same is true of the Hartford Prolific, the name of which has ceased to figure in the reports and discussions of vine growers.

(7) The Lenoir, which belongs to the same species as the Jacquez, and has been often, in our country, confounded with that variety, has proven one of the best American vines for direct production. The vine resembles very closely that of the Jacquez, but its wine is deeper in color and when grafted it bears larger clusters though relatively fewer in number.

(8) The Othello is a hybrid, produced by fecundating the blossoms of the Canada Clinton with the pollen of the Black Hamburg. It is known in England, Germany, and the Netherlands under the name of Frankenthal. The Othello adapts itself well to most soils in this region grows sturdily, bears freely, and produces a wine of excellent quality, the foxy flavor, so noticeable in northern vintages, having been almost

eradicated by cultivation in this warm, dry climate. Its hybrid origin has caused some apprehension lest it prove, in the end, subject to the phylloxera, but although in many cases the parasites have attacked its roots in great numbers, it has resisted the attack and continued to flourish.

With the above exceptions, it may be said that the native American varieties of grape have achieved, as direct producers of marketable wines, only a partial and uncertain success in this part of France. As a rule the same rank, aromatic flavors which render our grapes more valuable for the table than the wine press, have been recognized as defects by the French wine growers. It is rather as grafting stocks for standard European varieties that the American vines are subserving the most useful purposes in restoring the blasted vineyards of France.

Of the several excellent grafting varieties,

(9) York's Madeira seems to hold the highest rank. It is of the same family as the Isabella, and is a native of Pennsylvania. It has long been known in Europe, but has a poor reputation in America by reason of its liability to shed its leaves prematurely and on account of the tardy, imperfect ripening of its fruit. These defects have disappeared under the warm, dry climate of France, where it resists the phylloxera, holds its foliage until the coming of frost, and ripens its fruit perfectly in ordinarily favorable seasons. It grows well in a great variety of soils and resists drought best of all American vines. As a direct producer it bears too sparingly, and its wine has too much of the wild, rank flavor peculiar to many American varieties, but when grafted with the Aramon or Chasselas it attains during its fourth or fifth year a remarkable vigor, which seems to increase rather than diminish with age.

This is one of the few American vines which seems to have the desired degree of staying power and to promise long and vigorous life.

(10) Next in order of merit as a grafting stock comes Taylor's Prolific, known also as the Bullitt grape in the United States. Its origin is traced to the eastern slopes of the Alleghany Mountains, south of the latitude of Pennsylvania. It has all the qualities of an excellent grafting stock, and the plantations of this variety in the departments of Gard and Hérault, grafted with the Chasselas and Aramon, are among the finest in France.

It is of course impossible within the limits of a report like this to give a separate paragraph to each of the numerous varieties of vine which are now undergoing culture and observation in this country, but among the most important and promising of those not hitherto specified are: The Alvey, Marion, Black July, Elvira, Delaware, Noah, Senasqua, Triumph, Croton, Black Defiance, Salem, Telegraph, Harwood, Lady Washington, Duchess, and Union Village.

There is the large group of varieties belonging to the *Riparia* species, which have been more recently introduced and are now undergoing the tests of experience. The *Riparias* have thus far resisted the phylloxera far better in this region than in the north or west of France; and in certain districts of Hérault, where the soil is of a white, marly nature, they are rated above even the Jacquez as grafting stocks.

But the *Riparias* seem subject to a disease peculiar to that group, which in some cases has caused the vines to suddenly perish after a few years of vigorous growth. Pending the further study of this malady and until the numerous varieties of this family have been more fully tested, the best authorities recommend only two, the Glabre and Fomenteux.

Years must elapse before all these disputed points are settled and the culture of American grapes in France reduced to an exact system. The

problem embraces not only the choice of varieties best adapted to each special soil and position, but all the diverse methods of pruning and grafting, and, above all, the union of stocks and grafts adapted to each other by natural affinities. Each step of progress thus far made has only served to show the complicated nature of the task, but the enterprise and intelligence of agricultural France are enlisted in the cause, and unless the American vines should, with the lapse of years, become subject to the same pest which has devastated the native growths, a complete restoration of the French vineyards is only a question of time.

FRANK H. MASON,
Consul.

UNITED STATES CONSULATE,
Marseilles, February 3, 1886.

LYONS.

REPORT OF CONSUL NEWMARK ON THE WINE INTERESTS OF FRANCE.

The total wine crop of France for 1885 was 753,839,500 gallons, or 164,962,938 gallons less than in 1884 and 361,167,078 gallons below the average of the last ten years, being a falling off of over 32 per cent., and, with the exception of 1879, the poorest crop since the disastrous years of 1852 to 1856.

Besides the above there was produced in 1885 104,996,239 gallons of wine called "Vin de Marcs," made from the residuum of the grape with the addition of sugar and wine made from raisins in the following proportions:

	Gallons.
Vin de Marcs.....	45,452,321
From raisins.....	59,543,918
Total gallons.....	104,996,239

And being an increase of 28,783,194 gallons over 1884, when the quantity of these wines made was 76,213,045 gallons.

The reduction of the duty on sugar has undoubtedly been an important factor in the increase of the wine made from the residuum of the grape, 11,887,650 gallons more of that article being made in 1885 than in 1884.

The diminution of last year's product occurred mostly in the southern department, while in the eastern there was a general increase, and in the central no material change. There was a decrease in forty-five departments, and an increase in thirty-one, the most important being the following:

DECREASE.

Departments.	1884.	1885.	Departments.	1884.	1885.
	Hectoliters.	Hectoliters.		Hectoliters.	Hectoliters.
Aude.....	4,371,771	2,096,043	Landes.....	220,390	52,190
Ariège.....	161,994	30,874	Loire-Inférieure.....	1,395,000	527,000
Charente-Inférieure.....	1,144,819	609,152	Marne.....	524,043	372,685
Dordogne.....	232,571	167,696	Pyrénées-Basse.....	121,737	42,219
Gard.....	655,010	456,190	Pyrénées-Hautes.....	227,641	40,918
Gers.....	1,006,580	443,581	Pyrénées-Orientales.....	1,407,477	806,307
Gironde.....	1,338,183	1,076,056	Tarn.....	749,447	394,182
Haute-Garonne.....	1,206,643	575,968	Vendée.....	701,928	374,603
Hérault.....	2,575,704	2,148,130	Vienne.....	1,227,740	705,560
Haute-Marne.....	403,508	256,008			

INCREASE.

Departments.	1884.	1885.	Departments.	1884.	1885.
	<i>Hectoliters.</i>	<i>Hectoliters.</i>		<i>Hectoliters.</i>	<i>Hectoliters.</i>
Ain	324, 126	468, 621	Haute-Loire	57, 480	223, 004
Allier	185, 760	388, 318	Loiret	587, 929	868, 217
Côte d'Or	551, 529	1, 102, 082	Nièvre	174, 295	869, 696
Doubs	41, 100	132, 000	Puy de Dôme	713, 559	1, 080, 665
Indre-et-Loire	904, 000	1, 003, 244	Haute-Saône	99, 285	187, 865
Isère	404, 056	510, 021	Saône-et-Loire	534, 565	843, 763
Jura	67, 970	247, 243	Yonne	688, 037	984, 314
Loire-et-Cher	985, 799	1, 218, 403			

PRODUCTION COMPARED WITH AREA.

The vine covers about 4 per cent. of the entire surface of France, only thirteen departments (all northern) producing no wine; the area cultivated, however, has been continually diminishing since 1881, when it reached 2,699,923 hectares, or 6,671,509 acres, and which was reduced to 1,990,586 hectares, or 4,918,738 acres in 1885, a decrease of over 26 per cent.

The average product of wine per hectare in 1885 for the whole of France was 14.30 hectoliters, equal to 153 gallons, per acre, the yield of the most important departments being as follows:

Departments.	Hectoliters.	Hectares.	Yield per hectare.
Ande	2, 096, 043	111, 619	18. 77
Côte d'Or	1, 102, 082	34, 308	32. 12
Charente-Inférieure	609, 152	59, 217	10. 20
Dordogne	187, 796	64, 200	26. 28
Gers	443, 581	131, 977	33. 61
Gironde	1, 076, 056	139, 457	7. 90
Haute-Garonne	575, 968	70, 908	8. 12
Hérault	2, 148, 130	95, 658	22. 44
Indre-et-Loire	1, 003, 244	56, 304	17. 81
Loire-et-Cher	1, 218, 403	40, 588	30. 00
Puy-de-Dôme	1, 630, 665	32, 926	49. 52
Yonne	984, 314	37, 831	26. 01

It will therefore be seen that the smallest yield was the Gironde (the Bordeaux district), being only about 84½ gallons per acre, while the largest was Puy-de-Dôme 5.40 and the Côte d'Or (Burgundy district) 340 gallons per acre.

Among the numerous causes contributing to this large decrease in the grape crop were the great atmospheric changes that occurred during the spring and most of the summer, and which prevailed generally (even in those departments which show an increase) while the vine was in blossom, as well as during the growth and ripening of the fruit. The vine, after having suffered from frost in the month of April, was sorely tried by the drought of July and August, and finally ruined entirely, in many places, by hail.

The autumn rains, which in the south favored the development of the grape, prevented its ripening in some of the central departments, and in the mountains.

To these general causes the persistent and progressive ravages of the phylloxera and mildew continued the work of destruction in the south and west.

The phylloxera exists in fifty-four of the departments of France, and it is estimated that about 430,000 hectares, equal to 1,062,530 acres, are thus affected.

The planting of American vines continues, and has already been successfully followed in thirty-three departments.

The mildew was very destructive last year, notably in the south, and did an immense amount of damage. Great efforts have been made to find an effectual remedy, and, it is believed, with success, in a mixture of sulphate of copper and slaked lime.

DECREASE IN PRODUCTION.

An examination of the tables appended to this report will demonstrate what an immense decline has occurred in the wine interests of France, each year showing a poorer yield than the preceding one.

In 1875 the product was nearly 84,000,000 hectoliters, or more than 2,000,000,000 gallons of wine, but which has gradually diminished, amounting in 1885 to only about one-third of that quantity. It is expected, however, that the planting of American vines, and the cures for the various diseases that are being discovered, will arrest this decline, and that France may be able to retain the prestige of being the queen of wine-producing countries, and which she is in imminent danger of losing.

ALGERIAN VINE PRODUCTS.

The culture of the vine continues to progress in Algeria. The crop of 1884 produced 896,000 hectoliters of wine from 50,716 hectares; in 1885 this was increased to 1,018,300 hectoliters from the following provinces:

Provinces.	Hectares.	Hectoliters.
Algiers.....	22,337	898,330
Constantine.....	14,755	261,890
Oran.....	23,320	358,080
Total	60,412	1,018,300

IMPORTS AND EXPORTS.

In 1875, when the French wine crop was nearly 84,000,000 hectoliters, the imports of wine from foreign countries were but 292,000 hectoliters, but which have been gradually increasing, amounting in 1885 to 8,181,976 hectoliters, 8,030,899 hectoliters thereof being ordinary wine in casks (vin ordinaire) and were imported from the following countries:

Countries.	Hectoliters.
Spain.....	5,606,002
Italy.....	862,811
Other countries.....	1,561,486
Total	8,030,899

The customs value whereof was 321,235,956 francs, equal to 39 francs per hectoliter, or about 28½ cents per gallon.

The imports of wine from Italy decreased about 60 per cent. from 1884, they having amounted in that year to 2,146,068 hectoliters against 862,811 in 1885.

The importations of wines from "other countries" were more than double last year over those of the year before.* There was also an increase in 1885 in the imports of Spanish wines of 505,592 hectoliters over those of 1884.

Spanish and Italian wines have materially advanced in price in the French markets during the past year; the comparative quotations at the great wine warehouses at Bercy, near Paris, being as follows, per hectoliter:

Description.	January, 1885.	January, 1886.
Spanish wines	<i>Francs.</i> 40 to 55	<i>Francs.</i> 45 to 65
Italian wines	50 to 60	55 to 65

These wines generally contain from 11° to 13° of alcohol, and are mostly used for mixing with light French wines to impart to them additional strength and color.

The total exports of wine from France in 1885 were 2,651,305 hectoliters, of which there were shipped from the Gironde (the Bordeaux district), in wood, 1,058,796 hectoliters, valued at 109,058,988 francs; in bottles, 96,217 hectoliters, valued at 15,394,720 francs; and from all other departments, in wood, 1,277,965 hectoliters, valued at 60,045,600 francs; in bottles, 218,327 hectoliters, valued at 49,123,575 francs.

It will thus be seen that the wines in wood from the Gironde averaged 103 francs per hectoliter, or about 74 cents per gallon, while those from the rest of France were only valued at 47 francs per hectoliter, or about 34 cents per gallon; the wines in bottles, however, reverses this condition, for that from the Gironde averages but 160 francs per hectoliter, against 225 francs from the other departments. This will be easily understood when it is remembered that all the champagnes, and fine wines of Burgundy, are included in the latter figures.

SPECIAL WINE DISTRICTS.

The three districts famous for the finest wines in the world, the products of which are purchased and highly valued even in countries having good wines of their own growth, are the Bordeaux, Burgundy, and Champagne. The first named has suffered by far the most from the various plagues that have infected the vines, the product of the department of the Gironde alone having diminished from over 5,000,000 hectoliters in 1875 to a little over 1,000,000 in 1885.

Of the three districts just named, Burgundy is in this consular district, the vineyards producing its finest wines being in the department of the

* I have endeavored to ascertain details of what constitutes "other countries" whence imported, but have been unable to obtain the information, as the French customs authorities only publish the names of the principal countries of importation or exportation. There is, however, considerable wine imported from Austria-Hungary and probably the bulk of that not specified comes from those countries.

Côte d'Or, and extend from Dijon (a city of about 60,000 inhabitants, and the ancient capital of the Duchy of Burgundy) southward to the neighboring department of Saone-et-Loire, on the east side only of a long and narrow range of hills, like the spinal bone of France, and which is the dividing line of the pluvial waters between the ocean and the Mediterranean. Following that line of hills, and parallel with them, the road of the Paris, Lyons and Mediterranean Railway runs from Dijon to Italy, via Marseilles, and passes by all the most renowned vineyards of Burgundy, among which may be named Santenay, Chassagne-Montrachet, Paligny-Montrachet, Volnay Pommard, Beanne, Savigny-Alix-Corten, Vourgeot, Vosne-Romanee, Nuits, Premeaux, Dijon, Georey-Chambertin, Morey, and Chambolle-Musigny.

The fine wines grow about half-way up the eastern sides, and the best of these in every district grow even higher than half-way up, only common wine (*vin ordinaire*) being made from grapes grown in the plain at the foot of the hills and on the western slopes. This is important for our American viticulturists to consider, especially in California, where nearly all the grapes are grown in the plains or foot-hills.

In order to illustrate the great value of the fine wines of Burgundy, each year the Civil Hospital of Beanne sells the product of its vineyards by auction, which are so renowned that the occasion is made the object of a great demonstration; purchasers come from long distances; a public dinner follows the auction, at which speeches are made and extensive trial of the produce of the Burgundy grape, and wine interests are largely discussed. The sale for the harvest of 1885 occurred on the 8th of November, and brought an average of 1,492 francs per queue of 456 liters, equal to about \$2.39 per gallon. The highest price paid was \$3 and the lowest \$1.55 per gallon. These figures were a large advance on those of 1884, when the highest obtained was 1,350 francs per queue against 1,870 francs in 1883.

It must be borne in mind that these wines were perfectly new, having just been made, and that none of them will be brought into consumption for at least five years, hence some idea may be had of what can be expected from the careful and experienced cultivation of the vine and care of its product.

The grapes generally grown in Burgundy are the Gamay for the common, and the Pinot for the best, wines.

PREPARING BURGUNDY.

I cannot close this portion of my report without alluding to a visit recently made by me to Dijon, as above stated, in the Côte d'Or, and where are located some of the largest dealers in the famous wines of that (the Burgundy) district. I was particularly impressed with the unremitting care and attention they devote to the proper treatment of their fine wines, the location and construction of their cellars, reference being especially had to exposure, openings, ventilation, light, and every other detail, it being regarded as of the utmost importance that an even and proper temperature should be preserved; the manner of placing the casks and refilling them, sacking, clearing, and handling the wine receives their most scrupulous and constant attention, each quality and age receiving its appropriate and peculiar treatment. As a rule, these fine wines remain in the cask not less than five years. The bottling is done in the same cellar, and in the process of which like attention to the minutest details is had; one of the most important ob-

jects being to preserve a uniformity of temperature throughout, so that the wine should neither become chilled or heated in bottling. The same care is bestowed upon the cultivation of the grape, the manufacture of the wine, and its treatment before reaching the cellars of the wine merchant.

The grapes are closely selected, all being of a uniform quality and maturity; bruised or otherwise imperfect ones are rejected, and, as Burgundy possesses a temperate climate, they are not picked until fully ripe. New casks are only used for wine as soon as made, it being deemed highly injurious to put old wine in any but old packages.

It is the exercise of this great care to all the details of cultivation, manufacture, and treatment, acquired by the experience of ages, combined with the natural favorable conditions, that has made the wines of Burgundy renowned throughout the world, and colossal fortunes for their proprietors.

WINE INTERESTS OF THE UNITED STATES.

The manufacture of wine, although in its infancy in the United States, is making rapid progress. The area of land suitable to the cultivation of the grape is almost incalculable, and it does not require a very great stretch of imagination to foresee that it promises to become one of the most important of our industries, and that the day is not very far distant when the product of our vines will not only be sufficient for home requirements, but that we shall be enabled to contribute very largely towards supplying the rest of the world. Before this most desirable result can be obtained, however, very much has to be learned to successfully develop that great industry, and which knowledge can only be acquired in the old wine-producing countries of Europe. All the conditions of climate, soil, cultivation, quality of the grape, and manufacture and treatment of the wine should be carefully studied and properly applied. This is a matter of such great importance to our country that it should receive the most serious consideration, and in my opinion persons thoroughly competent in every respect should be commissioned by the proper departments of our national or State governments to reside in Europe and devote their entire time and attention in obtaining all the desired information, so that it may be disseminated among our people, and thereby promote the speedy development of this wonderful industry.

M. J. NEWMARK,
Consul.

UNITED STATES CONSULATE,
Lyons, France, January 27, 1886.

WINE INTERESTS OF FRANCE.

The wine harvest of France from 1788 to 1885, inclusive.

[From official documents. One hectoliter is equal to 26.417 gallons; one hectare is equal to 2.471 acres.]

Years.	Hectoliters.	Years.	Hectoliters.	Years.	Hectoliters.	Years.	Hectoliters.
1788	25,000,000	1853	22,662,000	1864	50,653,364	1875	83,632,391
1808	28,000,000	1854	10,824,000	1865	68,924,961	1876	41,846,748
1827	36,819,000	1855	15,760,000	1866	63,917,341	1877	56,405,363
1829	30,973,000	1856	21,294,000	1867	38,869,479	1878	48,720,553
1830	15,282,000	1857	35,410,000	1868	50,109,504	1879	25,769,552
1835	26,476,000	1858	45,805,000	1869	71,375,965	1880	29,667,472
1840	45,486,000	1859	53,910,000	1870	53,537,942	1881	34,138,715
1845	30,140,000	1860	39,558,450	1871	57,084,054	1882	30,886,352
1847	54,816,000	1861	29,788,243	1872	50,528,182	1883	36,029,182
1850	45,266,000	1862	37,110,080	1873	35,769,619	1884	34,788,726
1852	28,636,500	1863	51,371,875	1874	63,146,125	1885	28,536,151

RECAPITULATION.

	Hectoliters.
Average product from 1871 to 1875	58,032,074
Average product from 1876 to 1880	40,483,398
Average product from 1881 to 1885	32,874,235

Average annual production of wine in Europe.*

Countries.	Hectoliters.	Countries.	Hectoliters.
France	82,874,225	Switzerland	1,300,000
Italy	21,615,000	Turkey in Europe and Cyprus	2,600,000
Spain	22,000,006	Russia	3,500,000
Portugal	4,000,000	Greece	1,300,000
Austria-Hungary	10,000,000	Roumania	700,000
Germany	3,690,000	Servia	500,000

* England, Scotland, Ireland, Denmark, Belgium, and Holland do not produce any wine.

Comparative area planted in vines in France from 1875 to 1885, inclusive.

Years.	Hectares.	Years.	Hectares.
1875	2,421,427	1881	2,669,923
1876	2,369,834	1882	2,135,349
1877	2,346,497	1883	2,095,927
1878	2,295,980	1884	2,040,759
1879	2,241,477	1885	1,990,586
1880	2,204,459		

French imports and exports of wine from 1875 to 1885, inclusive.

Years.	Imports.	Exports.	Years.	Imports.	Exports.
	Hectoliters.	Hectoliters.		Hectoliters.	Hectoliters.
1875	292,000	3,731,000	1881	7,859,000	2,572,000
1876	676,000	3,331,000	1882	7,537,000	2,618,000
1877	707,000	3,102,000	1883	8,980,000	3,093,000
1878	1,603,000	2,795,000	1884	8,115,000	2,470,000
1879	2,938,000	3,047,000	1885	8,181,976	2,651,305
1880	7,219,000	2,488,000			

GERMANY.

REPORT OF COMMERCIAL AGENT SMITH ON GERMAN INDUSTRIES, 1885.

HOME AND INTERNATIONAL POLITICS.

The year has been one not so much of war as of rumors of war, but the German Empire has been little affected thereby, and has pursued its social, economical, and political projects undisturbed by convulsion within or trouble abroad. A slight ripple ruffled the current of its foreign relations—the Caroline Islands incident with Spain—but it proved to be of but small moment, and soon became a matter of little consideration.

With respect to international politics, the principal events of the year in which Germany prominently participated were the Congo Conference at Berlin, the adoption of a vigorous colonial policy, and the slight misunderstanding with Spain regarding the Caroline Islands. France's policy of conquest in Eastern Asia, Russia's advance towards Afghanistan, England's campaign against Burmah, and even the fratricidal strife among the people of the Balkan Peninsula, had but slight importance for Germany. But not so was it with the movements of the English in Egypt in financial concerns, which had for the Germans great interest, who have much capital invested in Egyptian securities.

In domestic politics the Empire has been occupied principally by measures of social reform. Besides the granting of a subsidy for steamship lines to Eastern Asia, Australia, &c., the Reichstag was busied during the year with only two new measures of far-reaching importance to the Empire, one the enactment of a law imposing a tax on exchange transactions and the other a modification of the customs tariff of 1879, and an increase of the duties on various articles, by which the duties on grain and cattle, as well as upon woven articles, became materially greater.

Significant of a strongly welded union and of the growth of the national sentiment among the people is the surrender of their peculiar privileges as free ports by Bremen and Hamburg, not so much of their own free volition as by the logic of events and the diplomacy of the master hand at Berlin. Why should they continue to enjoy these exclusive privileges any more than that New York and Philadelphia should be free ports of entry, independent of the general government at Washington, and complicating the commercial and economical policies and interests of the land? Thus has another fact been accomplished in the construction of a national unity in Germany. Soon, I dare say, will the exceptional rights reserved by certain states of the Empire in regard to the control of the post and the levy of taxes be resigned into the hands of the general government, and Germany be more than ever one body in fact as well as in name.

THE YEAR 1885 AND TARIFF LEGISLATION.

In commercial and industrial circles the year has not been a satisfactory one, and much complaint has been made of business depression, small profits, and excessive competition. The great complaint in Germany is excessive competition. Prices have been very low, and the

great depression which has generally prevailed throughout the world for several years past has not become much improved, and the Germans at the close of 1885 find themselves, economically considered, just about where they were at the end of 1884; but the year was not characterized by panics or disturbing catastrophes, and the Germans fared somewhat better than their neighbors, it would seem. A general and decided shrinkage of prices was a marked feature of the year. The universal depression in the United States exerts a great influence here, and the newspapers from America are eagerly scanned by the mercantile classes of Germany for the feeblest signs of an improvement of the business outlook in the great Republic. An awakening of business in America is hailed in Germany with pleasure, and exerts a beneficial effect on business here.

The year 1885 led the Germans further on in protective paths, and the large manufacturers and large land-owners of the realm have brought their influence to bear to keep up and strengthen the protective system inaugurated in 1879. This part of Germany seems to be decidedly in favor of a low tariff, and even of free trade, if I can judge from the sentiments expressed by the merchants who frequent this office, the great body of whom seem to be opposed to high customs duties; but the protective system must be very much in favor in the Empire at large, in view of the action of the Reichstag last spring in imposing increased duties on various articles and adopting the new tariff by a vote of 199 to 105. Grain was the chief article intended to be affected by the act, whose price it was thought would be raised thereby, but the increased duties have not been able to prevent the shrinkage of prices of agricultural products. These duties affected especially Russia and Austria, and Russia at once replied to them by raising its duty on iron, and is now busy, I understand, projecting an increase of the duty on mine products. Such a step, it is thought, would seriously injure the mining establishments of Silesia and Westphalia, which have large markets in Russia. Austria, too, is said to be contemplating measures of retaliation against Germany. The Government, according to newspaper report, calculates that the increased duties will not lessen the amount of wheat, rye, oats, barley, corn, and buckwheat imported, but that of malt, rapeseed, sesame, mustard, and pig-nuts 20 per cent. less will be imported. The increased receipts, from the higher duties on grain, will amount to about 8,000,000 marks (\$1,904,000), it is thought. The duty on live stock will bring about a decrease of 25 per cent. in the importation of swine, and 50 per cent. in pigs.

The Chamber of Commerce of Mayence, in commenting upon the tariff act of last spring, thus expresses itself, in substance:

In 1885 were an additional number of new duties levied, notwithstanding the wish expressed on many sides for a fair trial first of the protective tariff inaugurated during the last few years for the protection of the industry of the nation, and learn its effects for good or evil upon the production, trade, and export of the Fatherland. After almost three months' consideration, after violent resistance by the parliamentary opposition, the majority in the Reichstag were able to bring about an increase on the duties on grain, cattle, and wood, as well as those on a number of the most important raw products and manufactures. The movement for an increase of the duties on grain had its foundation in the general acceptance that the agricultural crisis of the last few years was due in the main to the low prices realized for grain, and that this, as well as the falling of ground rents, was a consequence of foreign competition, which overwhelmed Europe with vast quantities of grain. Against this increase of the duties on grain have we ever expressed ourselves, as we are of the opinion that a state like Germany, which can no longer, by far, be designated as an agricultural state in the narrow sense of the word, but is to be reckoned among the industrial states, should avoid every act which has a tendency to make dearer the chief necessities of life to the most predominant part of its population—the working-

men. Social quiet and the preservation of a healthful and active working population can certainly not be advanced through these reforms of the customs tariff, for it is beyond all doubt that foreign countries will in return close their doors as far as possible against the products of Germany, and thus exert a baneful influence upon them and upon the conditions under which our laboring classes live. But from other points of view the continual shaking up of the customs system is in the highest degree serious. Every manufacturer and tradesman who does not seek in a high tariff alone the cure for industrial ills, but above all things holds the stability of international customs and treaty relations as the best means to a healthy industrial development, will not fail to recognize the danger which lies hidden in the attacks upon the commercial treaty system brought about by the high tariff movement.

It is not to be doubted that there are in Germany a very large number of manufacturers and tradesmen who first now, after the adoption of the tariff law, become conscious of the damage which has been done to German industry, not so much by the increased duties themselves, as by repeated changes of the tariff. Not only a certain contradiction between the system of high duties even upon colonial products and the colonial policy will be experienced by German industry, but the retaliatory tariffs of other states will shatter many many branches of industry to their very foundations. If one considers the changes the new tariff has introduced he will seek therein in vain for a well-defined system. It only shows a disposition to meet the desires of individual branches of industry and to proceed further on in the way of protection. That governmental financial interests come into consideration with it also is plain. The new tariff is thus simply a compromise among different groups of interested parties. Sprung from a desire to improve the state of the farmers the agitation developed into a movement for general protection which the Government has taken advantage of to procure for itself augmented receipts.

PROPOSED COMMERCIAL CONNECTION WITH AUSTRIA.

While on this subject of the tariff it may be well to advert to a discussion which is raised every now and then by the newspapers in Austria-Hungary and Germany to the question of a customs union between Germany and Austria-Hungary, and of the formation of a customs union among the states of Middle Europe. Germany does not appear at present to be very favorable to the scheme, but Austro-Hungarians seem to be very much *en rapport* with it, and went so far during the past year as to call together a sort of international congress of agriculturists and political economists at Buda-Pesth for the purpose of considering and agitating the question of a tariff union among the states of Central Europe, which was brought about largely, doubtless, by the injury inflicted upon the wheat, cattle, and flour of Hungary by the customs tariffs of Germany and France, from which the Hungarians suffer very much, who are not a manufacturing but rather an agricultural people, and are largely dependent upon the exportation of their agricultural products for industrial articles. Especially with reference to Austria-Hungary it seems to have been supposed in the early part of the year by Hungarian statesmen that it was not so much against Hungarian products as against those of other lands that the tariff of Germany was directed, and that it would be an easy matter for a customs union to be formed between the two Empires; but the project appears not to have been taken up very warmly by the Germans so far, and the French broached as an offset to such a union a like understanding among the Latin nations, and the plan, too, struck against the rock of most favored nation clauses in treaties.

UNION AGAINST FOREIGN COMPETITION.

Then the question of a customs union among all the states of Central Europe was raised. This, it is argued, would conflict with no treaty stipulations, and, on account of the large number of parties to it, be devoid of every political danger. It would be directed principally

against the products of America, Russia, and India, and procure for the Hungarians an extensive and receptive market. As the proposition was favorably received by a number of German, French, and Italian economists, it was determined to invite a number of agriculturists and political economists at home and abroad to meet together at Buda-Pesth, and, under the denomination of an agricultural congress, to discuss the question of a customs union among the states of Middle Europe. The congress accordingly came together in the early part of October last, and besides being attended by numerous Hungarians and Austrians was participated in by a number of foreigners, Germans, French, Italians, Swedes, &c.

The Austrian Government, through its minister of commerce, greeted the congress on its assembling, and expressed its sympathy for the cause in which it was engaged.

The congress was in session three days, and a number of resolutions were adopted, looking to a stoppage of the competition with transatlantic countries, to the establishment of agricultural associations, improved farming, &c., and called upon the Government of Austria-Hungary, in common with other interested states, to bring about a customs union.

At the congress all sorts of shades of opinion were represented, from the extreme high tariff men to the equally radical no tariff ones, but all seemed to be agreed that the present customs systems of the various European states were detrimental to the common body, and must be done away with, in union against the common enemy, America. Count Karolyi, himself a protectionist, I believe, during the congress, said that—

The European states, by their present retaliatory tariffs, would in a few years do themselves more hurt than international competition could possibly inflict. With their tariffs these states desire to injure America and India, but have only succeeded in damaging states at home like Hungary and Roumania, which cannot produce so cheaply as their transatlantic competitors.

Other speakers, like the vice-governor of the Austro-Hungarian Bank, Dr. Kautz, and Count Keglevich, condemned in still stronger language the present suicidal customs policy of Middle Europe. Count Zichy gave it as his opinion that the reason why it was so difficult for the farmers of Europe to hold their own in the competitive struggle now going on was because of the onerous military burdens they have to bear, which injures the finances and takes from the fields of agriculture their best strength. And so the congress adjourned without having been able to provide a remedy for the removal of the evils under which the farmers of Europe travail. But the question of a European commercial confederation has been sprung and has not been heard of for the last time. But can Middle Europe afford to combine against the rest of the world?

CEREAL CROPS AND IMPORTS.

The grain and potato harvests of the year were good—very good—and showed an improvement over 1884, when they were excellent. Concerning the grain trade in this part of Germany during the year little, on the whole, that is favorable is to be said, I read. The increased duties brought no gain to producers, and carried in their train much injury to dealers. A significant retrogression has taken place in sales, and severe competition made them but little remunerative. The importation of grain, pod fruits, and malt, according to imperial statistics published at Berlin, showed during the period from January 1 to November 30,

1885, as compared with the corresponding period of 1884, quite a decrease, as follows :

Cereals.	January 1 to Novem- ber 30, 1885.	Compared with same period 1884.	
		Increase.	Decrease.
	<i>Double centners.*</i>	<i>Double centners.</i>	<i>Double centners.</i>
Wheat	5, 549, 867		1, 170, 594
Rye	7, 236, 234		1, 341, 675
Barley	3, 962, 709	422, 272	
Oats	2, 060, 049		1, 406, 260
Buckwheat	152, 329	44, 928	
Malt	595, 130	17, 436	
Corn and Syrian dahl, raw millet, and pod fruits	2, 339, 981	20, 910	

* A double centner equals 220.10 pounds avoirdupois.

There were thus 3,412,883 double centners less of these things imported than in the preceding year during the same period. The importation of mill products also sank from 530,485 double centners to 258,697 double centners, that is, of flour, broken and shelled corn, peeled barley, groats, and the like. Rice, too, fell in import from 759,782 double centners to 728,087. The exportation of grain, pod fruits, and malt amounted during the same time to 501,976, 77,707, and 50,837 double centners, against 909,982, 64,579, and 86,038 double centners in the corresponding period of 1884. Of mill products there were 1,202,946 double centners exported, against 1,214,670 in 1884.

The vintage of 1885 was a miserable one, as has been already reported by me in a separate dispatch.

IRON INDUSTRY.

The iron industry is in a flat state, but there has been an increasing production, it is said, with a decreased consumption. According to the German Iron and Steel Manufacturers Union, the production of raw iron in Germany from January 1 to November 30, 1885, amounted to 3,437,096 tonnes,* against 3,276,537 tonnes during the corresponding period of 1884. The year has been characterized on the whole by unsatisfactory prices, with a dragging market. No large discharges of workmen were necessary, and the German iron manufacturers were probably better situated than those of other countries. The state of the iron market in Rhenish-Westphalia at the end of the year is thus described by the regular correspondent of the *Frankfurter Zeitung*, one of the leading commercial journals of the Empire:

The year 1885 draws to a close without bringing to the Rhenish-Westphalia iron trade a more satisfactory condition of things. Apart from a few branches in which a better feeling has been observable for a few weeks past, the dragging course of business by which the year has been characterized still continues on the whole. There is, also, up to the present time no signs of any general enlivening of the business, as the demand at home does not give indications of greater activity, and the foreign market has not yet reached the requisite solid basis to gradually influence the domestic trade. The sale of raw iron during the last few weeks has been greater. A number of large orders for quality puddle iron have been given, as consumers have availed themselves of the low price to supply their needs for a long time, and prices have become somewhat strong in consequence and offers less. Quality puddle iron in Sieslerland is quoted at 41 to 43 marks (\$9.75 to \$10.23) a tonne, while the Rhenish-

* The tonne equals 2,210 pounds avoirdupois.

Westphalian furnaces note the same at 42 to 43 marks (\$9.98 to \$10.23) a tonne. For spiegel iron there is quite an active demand. For this kind of iron a very satisfactory number of orders from abroad have been received. The prices for spiegel iron have become firmer but not higher. Spiegel iron, with 10 to 12 per cent. manganese, is sold at from 48 to 50 marks (\$11.42 to \$11.90) per tonne. No improvement has occurred in the market for Bessemer and foundry iron (Giesserei). Sales fall below the most modest expectations, while prices maintain their downward tendency, and the prospects for a revival in this branch of the iron industry are very poor. Bessemer is quoted at 44 to 45 marks (\$10.47 to \$10.71) per tonne; foundry iron No. I, at 55 to 57 marks (\$13.09 to \$13.56); No. II, at 52 to 54 marks (\$12.37 to \$12.85), and No. III, at 49 to 51 marks (\$11.66 to \$12.14) per tonne, and at these prices reductions of 1 to 2 per cent. often occur. The rolling works are run as formerly, with not enough orders to keep them satisfactorily and regularly employed. In bar iron, business is at a standstill. The works have so little to do that they will keep shut during the holidays until the week after New Year. An improvement of the depressed prices is not to be expected soon. Bar iron (good commercial quality) is quoted at 100 to 105 marks (\$23.80 to \$24.99) per tonne, but contracts have been made under 100 marks. Iron wire is flat, but the orders from abroad for steel wire have increased, both in price and amount. The prices have become a little better, but remain on the whole unprofitable, and in the majority of cases hardly amount to more than the costs of production.

Business in fine tin is still unsatisfactory, and new orders come in insignificantly. The works are very unequally provided with work, and many have been compelled in consequence of limited employment to lessen their production. Prices are flat. The lowest prices for fine tin are put nominally at 135 to 140 marks (\$32.13 to \$33.32) a tonne, but reductions of from 2 to 3 marks (46 to 71 cents) are not seldom. Rough and boiler tins continue neglected. The price for A I quality is 145 to 150 marks (\$34.51 to \$35.70) per tonne, while A II is 10 marks (\$2.38) lower; but small concessions are often made. The works for the making of railroad materials and small ironware can keep up work only by restricting the production, as the work on hand does not admit of regular activity. Car factories and work-shops for the manufacture of car couplings and the like, on the other hand, are pretty busily employed. Machine factories and foundries connected therewith are insufficiently employed. So is it too with boiler-makers and bridge-builders.

TEXTILE INDUSTRIES.

In textiles the situation is also not altogether favorable, although the same depression does not exist that is to be observed in the iron business. Production seems to have increased, but the markets abroad have been less receptive, especially in transatlantic countries. There has been widespread complaint of falling prices. The shrinkage of prices has been greater in manufactured articles than in raw materials and half manufactured goods. There was less demand for the better classes of articles. In Berlin the largest branch of the textile industry there, that of wearing apparel, did a business, it is reported, of 9,000,000 marks (\$2,142,000) less than in 1884.

BEET SUGAR.

In various commodities attempts were made during the year to keep prices up by means of combinations and by a lessening of production, and notably was this the case with respect to sugar, which experienced a marked benefit therefrom. Hops, copper, silver, cotton, fats, and quinine were marked by decided declines. Raw silk has been very low in price, lower almost than ever before, but in the latter part of the year, after a long period of stagnation, an improvement in price took place.

While there was no brilliant improvement in the sugar market, business in sugar has been more favorable than in 1884, when there was a crisis in the industry. A limitation of production in this article has, of course, had a somewhat unfavorable effect upon the railroads engaged in the transportation of beets, sugar, and coal, and diminished their

receipts. The imperial bureau of statistics at Berlin gives the following as a review of the results of the sugar "kampagne," as it is termed, of 1885-'86. A kampagne is the period from August to August, from one crop to another. According thereto, there were in operation up to December 1, 1885, some 399 sugar factories, which, up to that date, had used 50,905,541 double centners* of roots. From this quantity of roots, that gave a product of 7,134,920 double centners, 28,676,906 double centners were grown by the manufacturers themselves, and 22,228,635 double centners were purchased. It is conjectured that this kampagne 19,821,623 double centners of roots remain to be worked up, which would make a total quantity of 70,727,164 for the entire kampagne, against 104,026,883 double centners for the kampagne of 1884-'85, or 32 per cent. less. This, however, is only a preliminary estimate, which can be a good deal changed before the end of the kampagne.

The industry being now on a somewhat healthier basis than it has been for some time, the Imperial Government judges that the opportunity is a fitting one for a revision and reform of the tax and drawback on sugar, which has long been demanded. Beet sugar is now subjected to taxation, as far as I understand it, in the following way: Under a law enacted in 1869 a tax of 80 pfennigs up to recently has been imposed upon each centner of beet roots to be converted into sugar by the sugar manufacturers, and when the crude sugar was exported a drawback of 9.40 pfennigs was returned, based upon the calculation that 12.5 centners of beet roots were required to produce 1 centner of crude sugar; but as improved methods of obtaining the sugar were introduced, by which the beets were made to render greater returns, about 10½ centners of roots only being requisite to yield a centner of raw sugar, the Government in allowing a drawback of 9 marks 40 pfennigs paid on each centner of crude sugar sent out of the Empire, a presumed tax on 1 to 2 centners of beets, which had never really been paid, thus paying, as it were, a premium on export. It is now proposed to remedy this state of things to a certain extent by the following measure, which has been submitted to the Reichstag at its present session, but which has not been acted upon. The law of June 26, 1869, is to be replaced on August 1, 1886, by the following provisions: From August 1, 1886, to July 31, 1887, a tax of 1.70 marks on each double centner (85 pfennigs per centner) of raw beets to be levied, and from August 1, 1887, onward 1.80 marks per double centner. On exported raw sugars of at least 90 per cent. polarization the following drawbacks are to be allowed:

(a) On refined sugar of not more than 98 per cent., from August 1, 1886, to September 30, 1887, a drawback of 18 marks for each double centner when the quantity amounts to at least 5 double centners; from October 1, 1887, onward 18 marks 20 pfennigs on each double centner.

(b) On candies and on sugar in white, full, hard blocks, cakes, or sticks, or made small in the presence of the officials, for the time from August 1, 1886, to October 31, 1887, 22.40 marks.

(c) For all other hard sugars, as well as for all white dry sugar (not containing more than 1 per cent. of water) in crystal, crumbled, or powdered form, of at least 98 per cent. polarization: (I) for the time from August 1, 1886, to October 31, 1887, a drawback of 20 marks 80 pfennigs; (II) for the time from November 1, 1887, onwards, 21 marks.

It is estimated by the Government that the number of double centners of beets annually used for making sugar will be 90,000,000, upon which a tax of 1.80 marks is to be levied, which would give a total tax

* 220.10 pounds avoirdupois.

of 162,000,000 marks (\$38,556,000). From this quantity of roots it is considered that 8,571,429 double centners of raw sugar, with a polarization of 93.75 per cent. will be obtained.

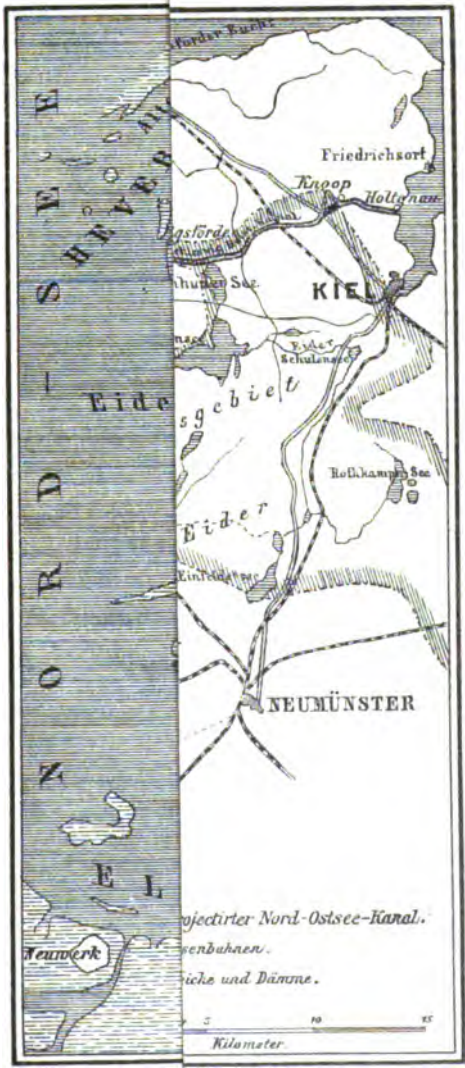
The domestic consumption is put at 3,500,000 double centners. There thus remain 5,071,429 double centners for exportation, which, with a drawback of 18.20 marks, will make a sum amounting to 82,300,000.80 (\$19,587,000) to be deducted from the entire tax, thus leaving an income accruing to the Government of 69,699,992.20 marks (\$16,588,598.14); after deducting the 4 per cent. administration costs of 6,480,000 marks, 68,219,992.20 marks would pass into the Imperial treasury; but the cultivation of the beet is constantly increasing, and in proportion as the quantity exported is greater in ratio to the amount consumed in the Empire will the receipts of the Government be less.

NORTH SEA CANAL.

In addition to the two foregoing measures, the attention of the Reichstag at its present session will be directed to a very important project, namely, the consideration of a bill laid before it by the Government providing for the construction of a canal to connect the North Sea with the Baltic. The project is at last brought to the doors of the Reichstag, after years of examination and consideration of the subject. The canal is one of great commercial importance, and has long been needed, but as is often the case in such matters, military and naval considerations have had more weight in hastening the development of the project than motives to aid commercial enterprise. Commercially, the object of the canal is to shorten considerably the route by water from the ports of the North Sea to those of the Baltic, to benefit the ports of the Baltic, which have suffered by the present economical policy of the Imperial Government, and to procure for the province of Schleswig-Holstein (for which the Eider Canal does not any longer answer its business requirements) a more important and more useful water-way. In a military point of view, the canal will be of great service to the German navy, and by its means will the various navy-yards, &c., of the Government be brought into closer connection, and united, as it were, and the coasts of the Empire in time of war be far better defended.

The canal will be well fortified, and that will add materially to the cost of its construction. The present route by sea to the Baltic round the Skaw involves a great loss of time and money. Thus German ship-owners on the North Sea coast, for instance, find it almost impossible to compete successfully with the freights on coal carried from Scotch and North of England ports to the Baltic. This inability to cope with the English in this article as well as in the other respects will be fully remedied it is thought by the new water-way. By it the voyage from the Thames to the Baltic will be made 200 nautical miles shorter it is claimed. The time saved by a use of the canal will be three days for sailing vessels, it is calculated, and for freight steamers twenty-two hours, when going at the rate of 8.25 knots at sea and 5.3 knots in the canal. The time required to pass through the canal will be thirteen hours, including the stoppage at each end. Pecuniarily, too, a great deal will be saved in pilot fees, insurance, and the prompter delivery of freight. Thirty-five thousand vessels now pass through the sound, it is said, and of these it is expected that fully eighteen thousand will choose the canal route with a registered capacity of about 5,500,000 tons. The voyage from Hamburg to the Baltic now takes 78.30 hours; by the use of the canal it will only be about thirty-three. From Bremerhaven the gain

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through the canal will be 32.54 hours, from Amsterdam 22.12, from Antwerp the same, from London 22.36, and from Hull 15.32.

Then, again, the dangers of the Skaw route will be avoided, which are exceedingly great, causing, it is estimated, an annual loss of two hundred vessels of all nations. The plan of canalization is by Mr. Dahlstrom, a merchant of Hamburg, and is set down to cost 156,000,000 marks (\$37,128,000), including 8,000,000 marks (\$1,904,000) for fortifications and other military works,* and will require 1,900,000 marks (\$452,000) annually to maintain it. The canal will leave the estuary of the Elbe about 3 kilometers above Brunsbüttel and enter the Bay of Kiel at Holtenau. The selection of this place as the termination of the canal on the Baltic has been made by reason of the importance of Kiel as a naval station. The course of the canal will be through the Kudensee and Gieselau Valleys to Wittenbergen on the Eider, which it will follow, via Rensburg, to Steinrade, when it will branch off and pass through the Eider Canal until it reaches Holtenau. The toll dues will be about 75 pfennigs (17½ cents) on each registered ton, including pilotage, electric lighting, and the like. The canal will be 60 meters broad on the surface of the water, 26 meters at the bottom, and 8.5 meters deep, and this depth will permit the largest ships of war of the German navy to pass through the canal. It will be supplied with locks at both ends, and with strong fortifications. Its length will be about 96 kilometers (47 miles). There is no doubt of the friendly co-operation of the Reichstag with the Government in the matter. (I annex to my dispatch a plan of the path of the canal, which I have clipped from the *Leipziger Illustrirte Zeitung*.)

PROPOSED EXPOSITION.

Much has been said during the year of the feasibility of holding an industrial exposition at Berlin in 1888, but the project appears to have fallen to the ground, as the business men of the Empire do not seem to show enough interest in it. The Government has sounded the leading manufacturers on the subject, and learns that such influential organizations as the following are opposed to the scheme: The Industrial Union of Central Germany, the Cotton Manufacturers' Union of Southern Germany, the Central Union of German Wool Manufacturers, the Linen Manufacturers' Union, the Iron and Steel Manufacturers' Union, the Middle Rhenish Manufacturers' Union, &c. Such is the enterprising spirit of the German manufacturers.

The Germans are forming great expectations of trade relations with China, based upon the assumption that they are to have the building of extensive railway lines in the Flowery Kingdom. Krupp, the Discount Bank, and the German Bank are said to be working together to secure such contracts for Germany, and to have sent agents to China to negotiate with the Government of the country on the subject.

LABOR INTERESTS.

On the 1st of October the accidents insurance act, providing for the organization of the workingmen of the Empire into societies for their

* As it is to be used for military purposes it will cost \$2,380,000 more than it would to build for pure commercial purposes.

relief when disabled by accident, went into operation. It was a social-political act of great importance to manufacturers and workingmen, and will doubtless be far-reaching in its effects.

The workingman receives a good share of public attention, and the questions of Sunday labor, normal hours of labor, prohibition of night work by women in factories, &c., are discussed by the Reichstag and press. The workingmen demand an increase of the number of factory inspectors, the establishment of courts for the settlement of differences between employers and employés, and the creation of a labor bureau at Berlin, to be devoted exclusively to the consideration of the labor problem; the courts for the settlement of disputes to be composed half of individuals chosen by the workingmen by direct secret ballot, and half by their employers.

It is a subject of general complaint that there are not enough factory inspectors in the Empire, and that they should be appointed by and subject to the National Government and not the several state governments, as is now the case. By the last report of the factory inspectors, for 1884, in Berlin, of 3,702 factories could only 514 be visited during the year; in the Magdeburg district, of 2,069 could only 258 be inspected. A general law on the subject of the protection of workingmen from accident is very desirable, as the different states have unlike laws and regulations on the subject. In one district factory owners must have complete arrangements to avoid accidents; in other districts none at all. Some of the states have excellent regulations on the subject. Each year, however, the Government seeks to have the inspectors pay especial attention to some particular point.

EMIGRATION.

According to official figures published at Berlin, the number of emigrants from German ports and Antwerp to transatlantic countries during the first eleven months of 1885, amounted to 101,480, against 141,056 during the corresponding period of the foregoing year, and 206,047 in 1881. The principal cause of the falling off is due to the business depression in the United States. The Government is disposed to regulate emigration, because it claims that thereby a great deal of military service is avoided, and because emigrants often leave contracts unfulfilled, and wives and children at home to be supported by the communal authorities where they live; yet it does not regulate it. Some idea of the number of males who emigrate before having performed their military duties may be gleaned from the fact that, in 1884, judgments were passed against 16,020 persons for having left the country before rendering military service, and that 12,265 cases were still under consideration in addition thereto.

CENSUS OF POPULATION.

A census taken on December 1, 1885, throughout the Empire showed a marked increase of population in the large cities.

The preliminary reports so far published show the gains to be as follows in the leading cities :*

* As published in the press.

Towns.	December 1, 1885.	December 1, 1880.	Percent- age of increase.
<i>More than 100,000 inhabitants.</i>			
Berlin	1,316,382	1,122,230	17.80
Hamburg (with 15 suburbs)	417,411	410,127	14.90
Breslau	298,893	272,912	9.52
Munich	260,005	230,023	12.16
Dresden	245,515	221,818	11.18
Leipzig	170,076	149,081	14.16
Cologne	160,926	144,772	11.18
Frankfort-on-the-Main	153,765	136,819	12.39
Königsberg	150,691	140,999	6.49
Hanover (without Linden)	138,912	122,843	13.10
Stuttgart	125,510	117,803	6.99
Bremen (about)	193,000	112,453	9.38
Nuremberg	116,193	99,519	16.75
Dusseldorf	114,451	95,458	19.98
Danzig	114,201	108,551	5.39
Magdeburg (without Buckau and Neustadt)	114,052	97,539	16.98
Strassburg	112,091	104,451	7.29
Chemnitz	110,693	95,123	16.37
Elberfeld	106,383	93,538	13.70
Altona	104,457	91,047	14.73
Barmen	102,921	95,941	7.27
<i>50,000 to 100,000 inhabitants.</i>			
Stettin	99,457	91,756	8.39
Aix-la-Chapelle	95,321	85,551	11.42
Crefeld	89,906	73,872	21.71
Brunswick	85,385	75,038	13.79
Halle	81,869	71,484	14.53
Dortmund	78,866	66,544	18.52
Mulhausen in Alsace	69,620	68,140	2.17
Posen	68,177	65,713	3.75
Mayence	66,314	61,828	8.13
Angsburg	65,476	61,408	6.63
Kasen	65,042	56,944	12.43
Cassel	64,088	58,293	9.94
Mannheim	61,370	53,465	18.18
Erfurt	58,307	58,254	9.49
Karlsruhe	56,972	49,283	15.92
Lubeck	55,498	51,055	8.70
Wiesbaden	55,460	50,230	10.41
Goerlitz	55,120	50,307	9.57
Wurzburg	55,036	51,004	7.83
Metz	54,716	53,131	3.90
Frankfort-on-the-Oder	54,427	51,147	6.53
Darmstadt	51,998	48,152	7.98
Kiel	51,699	48,594	18.59
Potsdam	50,851	48,447	4.96

Crefeld and Dusseldorf would thus appear to have increased relatively the most; Crefeld 21.71 per cent., and Dusseldorf 16.98.

The declared exports from this consular district to the United States during the year ending December 31, 1885, amounted in value to \$1,315,611.42, against \$1,257,342.86 in 1884, showing an increase of \$58,268.56, due to larger shipments of wine and agate ware.

JAS. HENRY SMITH,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Mayence, January 8, 1886.

RAILROAD TIES.

REPORT OF CONSUL TANNER ON RAILROAD TIES.

The scarcity of wood, and in consequence the high price of wooden cross-ties and telegraph poles, and the great output in iron production, with consequent low prices, have tended to the discontinuance to a great extent of the use of wooden cross-ties on the railways of Germany, and the substitution of iron and steel in lieu thereof.

The following table will show the extent and progress in this revolution:

Year.	Wood cross-ties.		Iron and steel cross-ties.		Iron and steel ground plates.
	Number.	To 1 kilogram.	Number.	To 1 kilogram.	
1880-'81.....	56,906,890	1,001	1,418,241	1,083	3,298.19
1881-'82.....	56,691,753	1,093	2,189,836	1,073	3,906.28
1882-'83.....	56,569,541	1,094	3,381,100	1,066	4,225.00
1883-'84.....	56,534,668	1,094	5,440,772	1,093	4,770.06

The same percentage of iron telegraph poles replacing those of wood might be shown.

This change is not taking place because of any special merit of iron or steel as cross-ties, but solely as a matter of economy.

Wooden cross-ties possess many good points which cannot fail to keep them in favor.

They are more easily handled, placed, and replaced, and do not bury themselves so readily in the road-bed as iron ties do, and would unquestionably remain in general use if they could be placed in Europe at reasonable prices, and if means could be devised for their preservation for a longer period than they last here (four months).

A good wooden tie, such as I speak of, could be readily disposed of at 60 cents per tie here in Europe.

GEO. C. TANNER,
Consul.

UNITED STATES CONSULATE,
Chemnitz, Saxony, December 25, 1885.

MUNICH.

Consul Joseph W. Harper transmits the following official return of Germany's imports and exports during December of 1885 and 1884, and during the whole of these two years:

IMPORTS.

[In double centners.]

Articles.	December, 1885.	December, 1884.	1885.	1884.
Raw cotton.....	224,999	151,906	1,663,429	1,775,173
Cotton yarns.....	16,343	17,798	208,105	221,401
Scrap-iron, &c.....	4,864	6,141	74,028	77,608
Pig-iron.....	159,601	147,552	2,159,733	2,645,013
Manufactured iron.....	30,527	57,651	553,083	482,349
Iron ore.....	433,062	679,800	8,498,740	9,804,424
Jute.....	54,590	49,196	539,066	334,720
Wheat.....	174,071	824,656	5,723,938	7,529,007
Rye.....	481,070	1,037,787	7,697,804	9,613,994
Oats.....	120,778	197,819	2,180,827	3,664,128
Barley.....	417,650	880,363	4,380,359	4,398,788
Maize.....	101,144	93,749	1,963,212	1,919,910
Rape seed.....	41,756	84,675	663,276	936,567
Linseed.....	86,948	95,764	577,810	609,924
Potatoes.....	8,787	18,812	433,428	343,451

IMPORTS AND EXPORTS OF GERMANY.

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IMPORTS—Continued.

Articles.	December, 1885.	December, 1884.	1885.	1884.
Fresh fruit.....	24, 515	21, 290	703, 859	639, 730
Machinery.....	28, 024	30, 187	320, 431	368, 624
Copper.....	10, 003	13, 076	131, 684	138, 187
Raw coffee.....	73, 411	93, 349	1, 181, 196	1, 111, 080
Flour.....	15, 039	61, 023	217, 034	462, 754
Rice.....	39, 986	43, 514	968, 073	803, 316
Petroleum.....	350, 801	699, 784	4, 821, 791	4, 625, 448
Lignite.....	2, 789, 123	2, 657, 226	38, 477, 768	34, 663, 223
Coke.....	119, 807	103, 429	1, 511, 239	1, 231, 904
Pit coal.....	2, 035, 275	2, 141, 007	23, 759, 051	22, 967, 771
Eggs.....	12, 654	11, 586	239, 561	193, 013
Sheep's wool.....	62, 082	66, 377	987, 878	1, 056, 661
Woolen yarn.....	14, 541	15, 967	103, 181	139, 979

EXPORTS.

Cotton goods.....	22, 348	25, 041	214, 732	247, 982
Raw lead.....	49, 313	43, 855	411, 229	493, 124
Chloride of potassium.....	49, 563	62, 673	689, 323	778, 302
Scrap-iron.....	82, 435	33, 845	632, 300	671, 086
Pig-iron, &c.....	248, 706	234, 196	2, 135, 345	2, 300, 075
Iron manufactured goods.....	642, 313	579, 570	7, 626, 556	7, 649, 582
of which rails.....	124, 598	119, 677	1, 647, 913	1, 444, 526
Bar iron.....	95, 482	97, 308	1, 444, 669	1, 540, 048
Iron and steel wire.....	187, 287	178, 176	1, 930, 981	2, 127, 937
Cement.....	131, 316	171, 990	3, 455, 904	3, 376, 023
Iron ore.....	1, 406, 857	1, 291, 864	17, 711, 477	18, 984, 710
Wheat.....	11, 727	16, 565	140, 895	361, 930
Rye.....	4, 987	4, 074	40, 203	62, 283
Oats.....	22, 584	17, 400	128, 207	185, 274
Barley.....	20, 030	44, 178	247, 000	372, 653
Potatoes.....	80, 983	53, 357	1, 265, 651	1, 327, 608
Fresh fruit.....	5, 220	4, 533	260, 247	303, 556
Glass and glass goods.....	59, 151	66, 642	871, 248	797, 140
Hops.....	18, 740	14, 852	126, 728	115, 133
Musical instruments.....	9, 944	11, 337	103, 440	108, 575
Locomotives and portable engines.....	5, 871	8, 659	68, 276	99, 124
Machinery.....	53, 246	60, 879	579, 138	725, 307
Clothes, &c.....	2, 450	2, 924	46, 098	51, 600
Leather goods.....	3, 510	4, 460	56, 433	64, 163
Beer.....	108, 302	119, 489	1, 006, 522	1, 433, 258
Butter.....	9, 014	9, 716	140, 667	135, 850
Flour.....	125, 118	233, 992	1, 290, 233	1, 816, 889
Molasses.....	40, 589	17, 609	806, 591	292, 607
Sugar.....	613, 794	1, 272, 896	5, 295, 471	6, 386, 292
Silk goods.....	3, 229	2, 608	47, 106	52, 320
Coke.....	556, 381	557, 504	6, 338, 573	6, 704, 123
Pit coal.....	7, 867, 522	8, 722, 406	80, 555, 181	88, 168, 498
Woolen goods.....	18, 473	20, 048	254, 233	258, 575
Raw sine.....	68, 398	57, 080	684, 321	570, 047
Rolled sine.....	21, 161	13, 011	106, 126	162, 720

MUNICH, February 16, 1886.

GREAT BRITAIN.

REPORT OF CONSUL SCHÖNHOF ON THE EARTHENWARE INDUSTRY OF TUNSTALL.

The exports of earthenware and porcelain from the United Kingdom in general and to the United States in particular were for the last three years as follows, according to the returns of the Board of Trade:

EXPORTS.

Year.	To the United States.	To the United States from this district.	Total.
1885	\$3, 295, 889	\$2, 848, 987	\$8, 415, 133
1884	3, 308, 670	2, 734, 570	8, 931, 564
1883	4, 534, 709	3, 870, 860	10, 708, 596

The falling off in the total of 1884 and 1885 from the total of 1883 is almost covered by the difference going then to the United States in excess of present sales. This difference, partly due to heavier purchases in anticipation of the new tariff law going in force on the 1st of July, 1883 (which raised the duties from 40 to 55 and 60 per cent. on plain and ornamented goods, respectively), and the subsequent trade depression, of course is felt very much in this district, which still sends 40 per cent. of all its exports in pottery to the United States.

Of these goods white granite, commonly called earthenware, forms in plain white or in decorated ware the bulk of the exports to the United States.

It is therefore natural to inquire first into the price-making facts underlying the manufacture of this article. I have taken as a basis the works of a manufacturer in this district who manufactures almost exclusively for the United States market. I have been met by this gentleman, as well as by other manufacturers to whom I applied for information, with the greatest frankness and liberality, which I herewith gratefully acknowledge, and he not only gave me all details, but also allowed me the examination of books and accounts made for the private use of the firm, from which I have been permitted to make copy and extracts. These I have verified and compared with other manufacturers, and there can be little doubt of the reliability and general correctness of the figures set forth.

COST OF PRODUCTION.

Materials.

Ball clay is brought from Devonshire, china clay, or kaoline and feldspar from Cornwall, and flint mostly from the French coast. These are the principal materials used in the body of earthenware and in the glazing. They have all to be brought from a distance.

The advantages of neighborhood which the potteries enjoy fall to the coal and marl beds in which this region abounds. The marl is used for the saggars in which the ware is burned, and this and coal from the bulk of the tonnage consumed in the manufacturing process.

This advantage will appear more impressive in the numbers of total tons of all materials used in the yearly product of the above-mentioned works, or "potbanke," as the earthenware works are called here.

Materials used in a three-biscuit oven bank in 1883.

	Tons.
Saggars clay	1,220
Coal	4,582
Coal slack	1,400
Brought from neighborhood	7,202
All other materials brought by sea	1,983
Total	9,185

78 $\frac{1}{2}$ per cent, of all matter is brought from the immediate neighborhood, and only 21 $\frac{1}{2}$ per cent., or a little more than one-fifth of the tonnage, is brought from a distance.

This is not an inconsiderable advantage to the earthenware maker when we consider the great proportion which freights bear in the price-making elements of his bulky and weighty goods.

On the 1,983 tons of clay, stone, &c., carried to the works mentioned above, there was an outlay of \$5,202 for freight, of which \$2,136 went for ocean carriage, and \$3,066 for canal freight on the Trent and Mersey Canal to Burslem, a distance of about 50 miles.

FREIGHTS AND COST OF MATERIAL PER TON.

On each class of materials used the following are the prices at the places of shipment and the freights paid thereon:

Material brought from a distance.

(1) Ball clay, free on board at Pool Devonshire, \$2.92 to \$3.82; sea freight to Liverpool, \$1.09; canal freight on Trent Canal, \$1.70; cartage to works, 24 cents; proportion of carriage, \$3.03, to cost of clay of \$2.92 to \$3.89, or nearly 100 per cent.

(2) Kaoline, free to Liverpool, average about \$7.29; prices, according to quality, vary from \$4.38 to \$8.75. Freight charges are the same proportion a ton, \$3.03 to \$6.81, or about 45 per cent. addition to cost.

(3) Cornish stone or feldspar, free on board at Pool, \$3.41; sea freight, 85 cents; canal freight, \$1.70; cartage, 24 cents; total, \$2.74 to \$3.44, or 82 per cent. addition.

(4) Flint is delivered at Liverpool at \$2.31 per ton, and has to pay, canal freight, \$1.70; cartage, 24 cents—\$1.94 on \$2.31, or 84.2 per cent.

On each ton of material brought to the banks is therefore an average of \$2.87, including 24 cents for cartage, per ton.

The total cost of prepared clay, the paste ready for the potter's use, is counted at \$12.16 to \$14.60 a ton.

Materials found in neighborhood.

(1) Clay or marl used for saggars and bricks, on the ground, 61 cents a ton; prepared, 97 cents; cartage, 24 cents.

The royalty on the clay amounts to about 12 cents.

(2) Coal slack is used for the firing of the boilers of the engine. The cost of this fuel is \$1.09 per ton, and cartage, 24 cents; total, \$1.33.

Twenty-five tons a week are consumed for the works of three-biscuit kilns.

Coal, best quality, is used for the firing of the Glost kilns, and costs \$2.07 per ton; cartage, 24 cents; total, \$2.31.

Coal of an inferior kind, costing, \$1.70; cartage, 24 cents; total, \$1.94 a ton, is used for the firing of the biscuit kilns (the first burning). This coal runs in seams along with iron ore, and is not serviceable for iron-

making, and is consequently sold much cheaper than other coal. It contains considerable sulphur, and is of slower burning than the best quality used.

Other manufacturers with whom I have conferred on the subject say that they can see no advantage in the use of this inferior quality, and use the best coal right through for furnace firing as well as for biscuit kilns.

The ton is the gross ton of 2,240 pounds.

COST OF LABOR.

Kiln firing.

Ordinary laborers are paid 75 to 85 cents a day. Ovenmen are paid \$1.11½ a day.

The works of a 3-biscuit kiln factory (the size of the works is expressed by the number of biscuit-kilns) employ eight ovenmen or kilnmen, one apprentice,* and one fireman or boss kilnman. The latter tends the firing of three ovens. He is paid \$18.25 for the three ovens, or \$6.08 per oven.

Cost of the placing in and drawing out of an 18-foot biscuit kiln.

Setting, twelve days at \$1.11½	\$13 38
Apprentice, first year, one day	78
Odd work	1 68
Sitting up (over night) to watch firing	2 01
Odd work	1 34
Drawing, five days, at \$1.11½	5 57
Apprentice, one day	78
Firing	6 08
Total	31 62

Biscuit warehouse work comprises the stamping and examination of the goods taken from the biscuit oven and is paid at the rate of \$6.32 per oven.

The 3-oven work, or \$18.96, is under the superintendence of a head-woman, who gets about \$3.89 a week from this. She has under her charge two girls of fifteen years at \$1.82 or \$3.65, and four to five women at \$2.31 or \$11.43.

Firing of a 16-feet 4-inche Glost kiln.†

Nineteen and a half days, at \$1.11½	\$21 74
Apprentices, two days, at 61 cents	1 22
Apprentices, two days, at 85 cents	1 70
Apprentices, two days, at 73 cents	1 46
Dippers	12 16
Ware cleaner	1 49
Cranking	2 07
Odd work and seggar housework	4 46
Sitting up	1 00
Firing	4 05
Total	51 35

* The apprentice is paid \$3.65 a week for the first year, \$4.38 the second, \$5.10 the third, and \$5.83 the fourth year. After this he gets full pay at \$1.11½ a day.

† For the firing of the three Glost kilns the head fireman is paid \$12.16, or \$4.05 apiece. Three biscuit ovens fill about three and a-half Glost ovens.

Glost warehouse work.—Sorting, per oven, \$4.62. One woman in charge receives pay for three ovens per week, or \$13.87, out of which she pays four helper-girls, say, \$2.43 a week, leaving her \$4.38.

One man, overlooker, selector, &c., receives \$7.29 per week.

Warehousing.—Head warehouseman receives \$7.78 per week; girl, \$2.19 per week.

PIECEWORK PRICES.

All work being paid at piecework prices, it follows as a matter of course that the earnings of the working classes employed in potteries are largely governed by the demand and the consequent opportunity for work. During the last year the depression in trade was felt very severely in this industry. The prices for labor, though, have not undergone any reduction. The smaller earnings express less work done. The piecework prices are substantially the same now as ruling prior to 1872. In that year of great business activity and high prices an advance of 10 per cent. on previous prices was effected. This advance was maintained under Lord Hatherton's award, who acted as arbitrator—a reduction of a penny on the shilling, or $8\frac{1}{3}$ per cent., was made. This brought the price back to about that paid in 1872, the time when the advance was obtained. Prior to 1879 (in 1876) the masters made an appeal for a reduction, which, however, was not granted by the board of arbitration.

In 1880 the workmen applied for a return to the old price list. Sir Thomas Brassey was appointed arbitrator. His well-known friendly inclination towards the workmen made it an almost foregone conclusion with masters and workmen that he would arbitrate in favor of the old rates.

He decided, however, in favor of Lord Hatherton's award as being fair and just to all parties concerned.

This list of prices and rates is the one now in force.

Though the labor price is uniform and not changing in the piece, yet the same cannot be said as to profit.

The sale price of white porcelain ware is the same in the gross price-list as fifteen years ago. But while the discount in 1872 was 30 per cent. of "best" and 50 per cent. of "second" quality, trade discount, less 5 per cent. and 5 per cent. in 1880, it had risen to $52\frac{1}{2}$ less 5 per cent. and 5 per cent., and is to-day $57\frac{1}{2}$ less 5 per cent. and 5 per cent., with a frequent $2\frac{1}{2}$ per cent. extra for "unselected" ware, which term comprises both the "bests" and "seconds" combined. This would bring No. 1 and No. 2 of 1872 to average 40 cent. discount, equivalent to "unselected" of the present method of shipping.

How these discounts affect the net result I will show here, assuming the same cost as now for 1882 and 1872 (in the period following 1872 the cost was considerably higher on account of increased cost of material, especially coal, through coal famine, &c.).

	1872.	1882-'82.	1885.
Trade price	100	100	100
Trade discount:	40	52 $\frac{1}{2}$	57 $\frac{1}{2}$
Less 5 per cent	60	47 $\frac{1}{2}$	42 $\frac{1}{2}$
	3	2 $\frac{1}{2}$	2 $\frac{1}{2}$
Less 5 per cent	57	45 $\frac{1}{2}$	40 $\frac{1}{2}$
	2 $\frac{1}{2}$	2 $\frac{1}{2}$	2
Less 2 $\frac{1}{2}$ per cent			38 $\frac{1}{2}$
			1
Net	54 $\frac{1}{2}$	42 $\frac{1}{2}$	37 $\frac{1}{2}$

While the profits in 1872 were perhaps excessive, they certainly invited a fierce home competition, which, as may be gleaned from the above, did not fail to make its impress upon prices and profits. American manufacturers have, perhaps, to ascribe the severer pressure of prices which is frequently heard to this loss of an additional protection accorded to them in the great profits Staffordshire potters made formerly and wanting now.

Even the decline from 1882-'83 to 1886 is a severe one.

Considering cost to be reached now the net prices were higher by 12 per cent. in 1882-'83 than in 1885-'86.

The net results of the work of the two years will be seen from this transcript of the total net product, the cost of material, the cost of labor total, and of general expense account, including rent, taxes, gas, and office expenses:

Product and cost of product of a three biscuit oven bank.

1882-'83:		
Outlay for materials of all kinds, including coal.....		\$35,292
Outlay for labor		49,409
Rent	\$2,774	
Insurance	78	
Rates, taxes, gas, water, &c.....	1,898	
Sundries, office, &c.....	2,550	
5 per cent. interest on capital of \$48,665	2,433	
		<u>9,733</u>
Net cost		94,434
Representing net profit.....		9,903
Product		<u>104,337</u>
1884-'85:		
Net products of year.....		\$78,896
Outlay for material		29,252
Outlay for labor		41,370
Expenses, same as in 1882-'83		7,300
Interest on capital		2,433
Net cost		<u>80,355</u>

after paying 5 per cent. interest on capital shows loss \$1,470.

The prices of material and labor were about the same in both years, as also the proportions which each bore to the other in the cost of production.

Years.	Material.	Per cent	Labor.	Per cent
	Amount.		Amount.	
1882-'83	\$35,292	41½	\$49,409	58½
1884-'85	29,252	41½	41,370	58½

ENGLAND AND AMERICAN POTTERIES COMPARED.

Comparing these proportionate positions of labor and material in pottery in England, with labor and material in American potteries, we find these nearly reproduced.

The statement is from the report of the secretary (Mr. Oliver) of the Potters' Association made at their meeting held at Spring Lake, in the summer of 1883, and is taken from the sixth annual report of the Bureau of Statistics of Labor and Industries of New Jersey, for the year ending October 31, 1883. Annual wages paid, \$3,729,535; value of materials, \$2,564,159; value of product, \$8,000,000. Proportion of material to labor in America in 1882-'83, $2,564,159 \div 3,729,535 = 40\frac{3}{4} + 59\frac{1}{4}$.

In the total product of 1882-'83, as expressed by the selling price the labor cost amounted to $46\frac{1}{2}$ in America against $47\frac{1}{2}$ in Staffordshire.

The rate chargeable to gross profits in the total product for 1882-'83 (the year previous to the increased tariff) was 27 per cent. in America, against 23 per cent. in Staffordshire.

WEEKLY EARNINGS.

As stated before, the prices being piece-work prices, the weekly earnings of potters depend largely upon the amount of work found for them at the "banks."

If work is slack, that is to say, business dull and orders few, as has been the case during 1884-'85, the earnings are reduced proportionately.

This, however, does not mean cheaper production; on the contrary, it means somewhat higher cost on account of the greater proportion which fixed charges bear to the general output.

In the following tabulated statement I give an extract made from the pay-sheets of the firm whose works I have under review: .

TABLE 1.

Workmen.	Martinmas, 1880-1881.			Martinmas, 1881-1882.		
	Number of weeks taken.	Average lost time per week in money.	Average net wages received per week.	Number of weeks taken, exclusive of 6 weeks' strike.	Average lost time per week in money, inclusive of wakes weeks, &c.	Average net wages received per week.
Eighteen hollow-ware pressers	51	\$0.47	\$7.66	46	\$0.55	\$7.50
Two handlers	30	3.12	10.74	46	1.60	13.15
One cup-maker	52	1.40	8.88	46	1.63	10.13
Two saucer-makers	51	0.55	8.75	46	0.80	7.54
One sagger-maker	52	2.61	17.09	46	2.22	16.61
One jiggerer	52	0.83	10.76	46	0.87	12.77
Two basin and dish makers	52	1.54	12.41	46	1.37	10.29
Two basin and dish handlers	44	1.22	9.32	46	1.30	9.81
One packer	52	1.13	8.86	46	1.33	8.70
Two mold-makers	52	1.97	11.82	46	2.42	11.99
Two plate-makers	51	0.97	6.12	33	1.05	7.03
One biscuit fireman	52	0.53	16.18	46	1.24	15.39
One glost fireman	51	0.9025	10.2525	46	0.79	11.37

TABLE 1—Continued.

Workmen.	Martinmas, 1882-1883.			Martinmas, 1883-1884.			Martinmas, 1884-1885.		
	Number of weeks taken.	Average lost time per week in money.	Average net wages received per week.	Number of weeks taken.	Average lost time per week in money.	Average net wages received per week.	Number of weeks taken.	Average lost time per week in money.	Average net wages received per week.
Eighteen hollow-ware pressers.....	51	\$1. 13	\$6. 51	52	\$0. 83	\$6. 98	52	\$2. 95	\$5. 01
Two handlers.....	51	8. 59	10. 28	52	1. 98	12. 56	52	4. 7450	8. 75
One cup-maker.....	51	2. 48	9. 03	52	2. 19	10. 4925	52	4. 13	7. 60
Two saucer-makers.....	51	1. 89	4. 76	52	1. 71	7. 82	52	3. 73	5. 85
One sagger-maker.....	51	4. 34	13. 75	52	2. 4925	11. 70	52	4. 93	9. 87
One jigger.....	51	2. 07	12. 08	52	1. 30	13. 54	52	2. 80	8. 81
Two basin and dish makers. } Basin and dish handlers.....	51	2. 39	9. 7425	*34	1. 39	9. 27	52	4. 7450	6. 91
One packer.....	51	1. 31	8. 31	52	0. 6725	8. 8325	52	2. 49	7. 31
Two mold-makers.....	51	3. 00	11. 25	†49½	1. 58	12. 31	52	4. 12	11. 21
Two plate-makers.....	51	1. 46	7. 5225	52	1. 66	7. 10	52	3. 53	6. 50
One biscuit fireman.....	51	3. 17	13. 55	52	2. 79	13. 94	52	5. 47	12. 63
One glost fireman.....	51	1. 47	10. 77	52	0. 8825	10. 80	52	2. 52	9. 64

* Three men.

† Two men.

NOTE.—Increase of glost and biscuit firemen "lost" represents "ovens" lost, not time. Stoke wakes and all other play-weeks are included, which makes the average a little less than it would be if only working-weeks were taken. On the other hand, they are all debited against them in the lost-time column.

The net earnings are the actual weekly wages drawn on the average during the year, of working weeks, stated in the respective column. All charges for steam or other expenses, and what is paid to helpers by the workingman, who hires and pays his own help, are deducted. The net result, therefore, is the weekly part of the total yearly earnings of each of the number employed in the different branches of work. By adding the two columns "lost time" and "average net wages received," we get the possible earnings under ruling piece-work prices, if no time is lost, either through sickness, dull trade, or other causes.

The possible earnings do not vary very materially, but are somewhat higher now than in the more prosperous years represented in this table, which is partly owing to improved working methods and appliances.

The actual earnings, however, are considerably less than they were in the years 1880-'81 to 1882-'83. The loss of time occasioned by trade depression is best illustrated in the time of the biscuit and glost firemen, who necessarily are the most reliable attendants if there is work. While the lost time is very small in 1880-'81 and 1881-'82, averaging for the two 5 and 6½ per cent., respectively, the percentage gradually rises to a loss of 27 per cent. in 1884-'85. The foot-note "lost" represents ovens lost, not time; explains itself, therefore.

Ovens lost means ovens not fired in consequence of slackness in trade. To compare this with American earnings I have to turn again to the report of the labor commissioner of New Jersey for his undoubtedly well-sifted and carefully-collected information. I refer to pages 278 and 279 of the report of 1873, where he says:

The question of potters' wages has long been a mooted one. Although it would seem a simple matter to ascertain what wages the potters actually make, the range is

so wide and difference in manual skill so great, that there has been too much room for misrepresentation. In their argument before the United States Tariff Commission, at Long Branch, August 22, 1882, a member of the committee of the pottery manufacturers makes the following assertions: "I have taken fifteen potteries in Trenton, with the *average** work of each man in the different branches, for comparison with the earnings in English manufactories. * * * It will be noticed (from tables given) that plate-makers in the English manufactories average \$7.70; Americans average \$20.30. English dish-makers, \$9.62; Americans, \$19.43. English cup-makers, \$9.92; Americans, \$19.67. English saucer-makers, \$7.63; general average of all England was \$8.69 per week, and in Trenton \$18.50; American average, \$18.58; and so on right through the list of branches, showing that we are paying a little more than 113 per cent. above the rate paid in England for the same work." This extraordinary statement, which went unchallenged, is not at all borne out by the facts. Wages paid for help and for steam power by the workmen are evidently not deducted, and the *average* could hardly have been correctly calculated. A communication which will be found in full on page 78 of this report, gives the average wages paid at one of the principal potteries of Trenton in 1881.

Workmen.	Our own.	Potters' committee.
Hollow-ware pressers.....	\$10 38	\$17 90
Dish-makers.....	16 35	19 43
Flat pressers, all pressers except hollow ware.....	12 18	20 30
Handlers.....	9 13	16 62
Jiggers.....	17 10	21 89
Turners.....	12 19	16 97

This is certainly a reliable estimate, and will show that the estimates of the potters' committee must be cut down from 25 to 50 per cent.

The potters earn good wages but not the wages of the committee's estimate.

It should also be remarked that in the above comparison the branches in which the fewest are employed, jiggermen and dish-makers, are those in which the statements regarding wages most nearly agree.

Comparing, then, the Trenton earnings of 1881, as from the estimate of the labor commissioner, with those of 1880-'81 and 1881-'82 paid in Staffordshire to cover the same two half-yearly periods when it may be presumed potters were equally well employed in both countries, we find:

Workmen.	Staffordshire.	Trenton.
Hollow-ware pressers.....	\$7 58	\$10 38
Dish-makers.....	11 81	16 35
Flat pressers (saucer-makers).....	7 15	12 18
Handlers.....	11 95	9 13
Jiggermen.....	11 77	17 10

In both cases the actual working days are given. "The total amount of wages paid in each branch to those workmen who were employed during the whole year was calculated." (Statistics of Labor of New Jersey, 1883, page 78.)

The average of earnings of potters is given in the abstract below, which is taken from the books of fifteen representative pottery-works. The working potters, dissatisfied with the decision of Sir Thomas Brassey to restore the 8½ per cent. taken off their wages under Lord Hatherton's award, instituted a strike in Martinmas, 1881,† which lasted until

*The italics are ours.

† All contracts and price regulations are made and date from Martinmas to Martinmas.

Christmas, and which is the six weeks' strike expressed in the respective column of Table No. 1.

TABLE 2.

Works.	Flat pressers.	Dish- makers.	Cup- makers.	Saucer- makers.	Hand-basin makers.	Hollow- ware pressers.	Hollow- ware jiggerers.
No. 1.....	\$7 75	\$7 55	\$10 47	(*)		\$7 80	
No. 2.....	6 24	6 68	14 61	\$8 02	\$8 14	7 64	\$12 47
No. 3.....	7 38	6 70	(*)	7 30	6 56	10 31	9 93
No. 4.....	9 73	9 73	(*)	7 30	10 95	9 25	
No. 5.....	6 70	9 71	(*)	7 50	10 93	9 31	3 62
No. 6.....	6 23	14 60	7 06	7 54		7 79	10 95
No. 7.....	7 28	7 43	(*)	(*)	7 98	7 79	10 22
No. 8.....	8 96	7 75	(*)	(*)	8 94	7 40	9 73
No. 9.....	7 24	8 90	6 96	6 93	9 13	8 06	12 71
No. 10.....	9 13	7 30	9 72	9 52		9 49	
No. 11.....	6 14	11 68	6 43	6 25	11 60	7 87	11 03
No. 12.....	7 49	14 60	9 73	10 70	16 63	6 72	20 69
No. 13.....	9 25	10 95	16 79	8 52	7 79	7 30	10 22
No. 14.....	8 14	12 78	8 02	9 37	8 52	8 52	14 48
No. 15.....	8 68	8 88	(*)	8 72	9 42	7 98	9 19
Totals.....	116 22	145 04	89 80	95 68	116 59	122 73	140 24
Averages.....	7 75	9 67	9 97	7 97	9 71	8 18	11 69

Works.	Printers.	Ovenmen.	Sagger- makers.	Mold- makers.	Turners.	Handlers.
No. 1.....	\$7 42	\$6 68	\$7 70	\$9 01	\$7 66	\$8 14
No. 2.....	5 86	7 03	7 42	8 93	7 36	6 04
No. 3.....	4 88	6 68		12 22	6 66	9 93
No. 4.....	6 56	6 68	10 95	10 95	7 30	7 30
No. 5.....	7 18	8 02		8 52	9 87	7 70
No. 6.....	6 56	6 82	6 56	11 44	8 76	9 73
No. 7.....	7 11	7 26	9 69	7 66	9 87	7 46
No. 8.....		6 68	(†)	12 00		7 82
No. 9.....	6 17	6 68	8 92	10 70	6 74	(*)
No. 10.....	6 82	6 68	7 79	8 26	8 76	10 22
No. 11.....	6 33	6 94	7 35	10 83	7 54	7 79
No. 12.....		7 30	7 30	13 85		6 04
No. 13.....	7 60	6 68	12 16	10 45		9 49
No. 14.....		6 68	7 66	13 76		13 01
No. 15.....		6 68		9 23		(*)
Totals.....	72 49	103 49	93 50	154 31	80 52	109 67
Averages.....	6 59	6 59	8 50	10 29	8 06	8 43

* Women.

† Contract.

The consecutive numbers of the first column represent the firm whose wage-account is given in the line following their respective number. Some earnings are very much higher than others, and are due to the exertions, undoubtedly, of some exceptionally good workmen. The total yearly net earnings in each branch are divided by the number of workmen employed in the respective line, and thus a correct average is obtained.

The list was prepared by the secretary of the manufacturers' association, Mr. Henry W. Ackrill, and is given as representing average net earnings per man per week, all deductions for attendance and other purposes being made.

The total average per man per week is \$8.70 each.

At the time of its publication it was said by the representatives of the workingmen that the list was not a fair average, as it represented the best factories of the more improved type, and that the more backward ones showed lower earnings.

The correctness of the figures, however, was not assailed. Nor would the cost of production be affected by the statement, even if the non-incorporation of inferior works had proven a somewhat lower average.

PIECEWORK PRICES.

I have endeavored to obtain the piecework rates paid in both countries.

I have selected for comparison such lines where the prices are rated per dozen pieces here as well as in the United States. The Trenton prices are the printed list prices "adopted February 1, 1885, by the manufacturing potters' association of the city of Trenton, N. J. Prices in American dozens and subject to 8 per cent. discount." This discount I have deducted to conform to the net prices paid in Burslem, Staffordshire. In these last-named prices steam-jiggers, gas, and pugging clay are free.

Articles.	Burslem.	Trenton.	Articles.	Burslem.	Trenton.
Bakers:					
No. 3..... per dozen..	\$0 07	\$0 09½	No. 9.....	21	82
No. 6..... do.....	11	12	Jugs (pressed):		
No. 10..... do.....	18	18½	4s.....	53	86
Brush vases.....	83	46	6s.....	48	70
Chambers (average sizes):			12s.....	37	55
Covered, pressed.....	44	92	24s.....	29	45
Uncovered.....	32	61	30s.....	26	44
Comforts, No. 6.....	38	45	36s.....	24	38
Cuspidors, uncovered and un-			42s.....	16	30
handled:			Mouth ewers (Nos. 1 and 2)		
No. 2.....	1 10	1 29	average.....	44	48
No. 3.....	77	1 10	Month basins.....	22	27½
Cuspidors, uncovered and han-			Nappies:		
dled:			Jiggered (3 and 4).....	05½	10
No. 2.....	1 29	1 84	Plain (5).....	06½	10½
No. 3.....	1 10	1 61	Scalloped (6 and 7).....	09	12½
Cuspidor covers (all sizes).....	44	32	Scalloped (8).....	12	14½
Casseroles, covered:			Edges (9 and 10).....	15	12½
No. 6..... per dozen..	40	87	Salads (fluted and scalloped):		
No. 7..... do.....	46	96	No. 7.....	44	65
No. 8..... do.....	52	1 06	No. 8.....	50	76
No. 9..... do.....	59	1 20	No. 9.....	55	84
No. 10..... do.....	62	1 33	No. 10.....	60	85
Notching.....	11	13½	Sauce boats:		
Dishes (oval):			Fast ends.....	50	69
No. 3.....	07	09½	Covered tureens.....	68	1 00
No. 6.....	11	12	Tureen stands.....	22	33
No. 10.....	13	18½	Soup tureens:		
No. 14.....	19	29½	Oval (9 inch).....	1 54	2 75
Ewers:			Notched (10 inch).....	1 86	3 00
No. 6.....	66	92	Covered (11 inch).....	2 00	3 22

Where prices of piece labor vary so much as appears from this abstract, much allowance must be made to differences in patterns and style. A close approximation could not be reached unless samples of each kind were produced for comparison, a matter of practical impossibility. Besides this, much of the difference may also be due to improved methods and machinery, handwork coming nearest in both countries.

A great deal of work is being done by machinery which was formerly done by hand process.

Packers' expenses are also paid by the piece here as well as in New Jersey.

Both are reduced to net, as the gross price in both instances is subject to 8 per cent. discount.

Packing-receptacles.	Burslem.	Trenton.
Crates, 10 bar each.....	\$0 30	\$0 41
Crates, 12, 14, 16 bar each.....	30	31
Hogsheads, Demerara.....	80	87
Tierces.....	22	23
Barrels.....	22	13½

Other work, net prices in both countries.

Workmen:	Burslem.	Trenton.
Dippers..... per week..	\$12 12	\$15 00
Draymen..... per day..	96	1 50
Old men (laborers).....	. 84	1 25
Steam jiggers..... per week..	Free.	2 00

VALUE OF CRATES AND TRANSPORTATION CHARGES.

The average net value of a crate of white granite ware, such as shipped from here to United States is \$34.06. The charges upon this consist in the packing and transportation expenses.

The packing, crate, and straw, amount to about \$3.89 per crate, of which \$1.70 pays for the crate, and \$2.19 goes for packing expenses.

The freight charges to New York from Liverpool are \$1.82 per ton measurement, the crates averaging about a ton and a quarter each, or \$2.51 per crate.

This by no means exhausts the freight expenses. They may be summarized as follows: Agent and shipping charges per crate, 30 cents; Liverpool charges from rail to steamer, 36 cents; railway rates to Liverpool per ton weight, \$3.85, or per crate, \$1.93. Total charges per crate to New York, \$8.99 or about 25 per cent. on the cost of the goods; and, if we deduct the packing expenses, 15 per cent. will have to be added as representing the freight charges. Most goods being shipped by the Trent-Mersey Canal, a saving of 41 cents per crate is effected, the canal rate being \$1.64 per crate; cartage, 24 cents; agent and Liverpool charges, 30 cents, or \$2.18 against \$2.59 by rail.

The great proportion freight bears in an item of such weight and bulk as earthenware, can be seen from this: that the works mentioned in this description of cost of manufacture and of which I stated the gross output in 1882-'83 as being \$104,337, shipped in that year to the United States 3,040 crates of earthenware, weighing 1,368 tons, at an outlay of \$4,438 for freight to Liverpool alone.

Shippers' charges and carting expenses were not included, which, at 51 cents per crate, amounted to the additional sum of \$1,657, being a total of \$6,093 upon a business of \$104,337, done almost exclusively with the United States (ocean freight not counted).

RAILWAY FREIGHTS.

The freight charges over English roads are just now agitating the public mind.

A report of Sir Bernhard Samuelson, M. P., to C. M. Norwood, esq., president of the association of the Chambers of Commerce, has just appeared in print.

The report gives the charges on different classes of goods over like distances on railroads in Great Britain, Germany, Belgium, and Holland.

On bulky goods especially, the discrimination falls heavily upon British producers. On common earthenware, valued at, say \$24.33 a crate, a class of goods sent mostly to South America, the freight differences are large enough to have diverted much of the trade to works near Bremen. I should branch out too much were I to enter into this very important question here, the more important as so many of the difficulties of the competitive struggle are charged to labor, while they clearly may be traced to vested or acquired rights.

The paralleling of lines, and all which that term implies, though destructive of income and often of investment, has, at least where this principle is carried into practice, given the United States the cheapest freight rates in existence. Here, this wholesome check upon railroad charges seems to be absent, all roads being built on Parliamentary grants, which exclude competition on territorial divisions, except under new grants, of course strenuously opposed by the old lines.

The Trent and Mersey Canal is owned by the North Staffordshire Railway Company, and "to charge what the traffic is worth" seems the predominant principle in railroading.

The comparative freight charged for earthenware and china from Stoke to Liverpool, a distance of say 50 miles, and those over a like distance in the other countries named above are: Stoke to Liverpool, \$3.65; same distance, Germany, \$1.13 to \$1.97; same distance, Belgium, \$1.60 to \$1.76; same distance, Holland, \$1.13 to \$1.30.

To recapitulate, the freight charges for material and shipping goods to the United States: The product of the works, valued at \$104,337, has, in the first place, the sea freight of materials, \$5,202, included in the cost of the goods; second, freight to Liverpool, \$4,438; third, shipping charges, \$2,034; fourth, ocean freight to New York on 3,040 crates at \$2.51 per crate, \$7,630. Fourteen thousand one hundred and two dollars of this freight is a charge on the finished goods from the works to be paid by the American consumer.

METHODS OF WORKING.

Few industries offer so great a field of study as the potteries. Few so varied a field of labor. It reaches from the crudest form, quarrying, to the highest skill in art.

But even the crude forms require no small attention. It may be said that the industry is one of the most difficult ones to jump into, and an easy one to grow up to. Here everybody seems to have a natural adaptation for it, and the masters also seem to know their trade thoroughly.

Many of the present generation of manufacturers have started in life as working potters. Most of them have their own secrets to guard as to the mixture of materials, the clay used for potting the glazing, &c.

The absence of crazing, due to the greater or smaller shrinking of the clay of the glaze in firing, is one of the causes in which they take great pride, and which keeps their ware in such prominence in foreign markets.

EXPORTS TO THE UNITED STATES.

The exports to the United States, excepting years of great trade expansion, show, even after the increase in the tariff in 1883, during the two last years of trade depression in the United States, a decided in-

crease in packages over those during each of the last seventeen years, dividing them into periods of depression and periods of expansion, are as follows:

Period of trade expansion in the United States:

1869	104, 954
1870	97, 220
1871	103, 669
1872	104, 103
1873	77, 528

Period of trade depression in the United States:

1874	65, 164
1875	66, 209
1876	60, 193
1877	69, 951
1878	64, 461
1879	75, 701

Period of trade expansion:

1880	99, 977
1881	93, 032
1882	96, 502
1883	107, 322

Period of trade depression:

1884	75, 797
1885	79, 200

Under the auguries of returning trade activity in the United States, the exports in pottery during the six weeks of the calendar year from district, compared with the same period of last year, show an increase of 2,944 packages shipped, there having been 8,816 in 1885, against 11,560 packages in 1886.

IMPROVED METHODS OF MANUFACTURE.

The works show by their construction, in the additions, annexes, &c., that they are of gradual growth. Even the machinery and working methods employed show the gradual development. Improvements and new appliances, while rapidly introduced now, do not at once displace all old tools. While some remind us of the time of the Pharaohs, others in the same factory bear the stamp of the greatest era of invention and are models of ingenuity. One still sees, in the same factory with steam and other appliances of the most improved patterns, boys turning the wheel for the potter.

One of the most recent inventions gradually being introduced into all the works is the battering machine. The old process has been for the potters to use a heavy instrument or batter, to flatten out his clay and to press out all remaining air particles.

This batter, weighing about fourteen pounds, had to be lifted up to the full height of the upstretched arms and brought down by the potter upon his clay each time for each cup, saucer, plate, &c. The suotive force of the clay of course increased this tax upon the potter's muscular power very greatly. A cup, saucer, or dish maker, making, say, sixty-five dozens a day, had therefore to lift the batter and bring it down with his full strength seven hundred and eighty times during the day. Now the automatic bat-making machine is doing this work for the potter without any strain upon him. The old process has been the main cause of the early exhaustion of the working potter. With this great help to

him he lengthens the days of his life and of his earning capacity. And yet great opposition was offered at first to this great boon by those whom it was intended to benefit in supplying them with a new addition to the many blessings which the inventive spirit of man devised to lighten toil and humanize work,—the old argument of “machinery throwing out labor.”

Now the opposition to this machine has worn off. The workmen express themselves as well satisfied, the machine relieving them of the heaviest part of their work.

Another machine is a cup and saucer machine, making cups, saucers, &c., by machinery, and is simply the application of the old hand-tools, largely used yet in the potter's hands in the United States, to a mechanical contrivance. Aside from the labor advantage in piece-making is that of regularity of thickness. The tool being set, it is impossible to vary the thickness of the article made, thus avoiding the annoyance and loss with thick and thin cups and bowls in the warehouse.

Many are the machines used for stamping out the thimbles, stilts, and spurs used in setting between the articles put in the saggars for firing the kilns, as also for small butter-plates and such-like things.

Thus the industry tries to keep abreast of the time, but while the mechanical part of the art is diligently looked after the higher branches are not neglected.

FOREIGN COMPETITION AND ART EDUCATION.

Driven to this by foreign competition, the manufacturers find that unless they keep a steady lookout they will be superseded by such who are more ready to respond to the appeal which the pottery industry is making to a more developed sense of the beautiful. It is not the least of the advantages arising from the improved conditions of the working classes that they become more critical in their desires.

Ornament and decoration, shape, and color become matters of demand with the purchaser, and, of necessity, study with the producer.

The potter's as well as other industries have to respond to this altered condition if manufacturers wish to keep their trade in hand.

The people will buy what pleases their improved tastes, no matter where the goods are made. The master potters are on the alert to follow up the example which Germany and France are setting them in the technical education of their working classes; and well they might, as the great advances that have been made in those two countries in this category, it is admitted, have left England somewhat behind.

A voluntary committee, consisting of Mr. William Woodall, M. P., Mr. Godfrey, and Mr. Cartledge, the head master of the art school of Hanley, the principal town of the potteries, has lately visited the continent with a view of collecting information on the relative position of English art education.

I am promised their report, but at present I can only say from what I glean from the remarks of one of the gentlemen, that they would advise greater exertion to keep in line with their continental types. Yet from the standpoint of an observer from America, where technical instruction as applied to special trades and industries, among all her great imposing structure of education, has been so sadly neglected, the English do great work in this direction. I shall endeavor to collect more general facts relating to technical instruction hereafter.

In this connection I will only mention the art schools in this one district, all having their objective point in pottery.

Schools of art in the pottery district, their year of opening, their number of regular attendants in 1885, and population of the different towns.

Year of opening.	Towns.	Population.	Attendants.
1847	Hanley	41,976	340
1858	Newcastle-under-Lynn	15,949	90
1847	Stoke-upon-Trent	14,008	240
1869	Burslem	35,000	260
1879	Longton		80

The pottery district is only eight miles long, and these towns mostly touch each other.

The pupils are almost all potters' children. The schools are supported by public subscription. A tuition fee of 49 cents a month is paid by the pupils and aid from the science and art department.

A sum of money is voted annually by Parliament for instruction in art in the United Kingdom. The payments are made to the local committee of a school of art on account of persons of the industrial classes only, teachers, or their children above twelve years of age, who pay fees for being taught. These payments by the art department are made in proportion to the efficiency of the pupils and the excellency of the work under examination by the local committee. The sums given in aid range from \$2.43 for every exercise in free-hand drawing from the flat, practical geometry, and perspective satisfactorily worked in a given time, to \$9.73 on account of every student who shall submit satisfactory works executed in the school-rooms during the previous year, in drawing, painting, modeling, or designing. Fourteen dollars and sixty cents on account of free studentship is granted for every artisan being a draughtsman, designer, modeler, or handicraftsman, under special rules of satisfactory examination. Seventy-three dollars is paid for an art-pupil teacher in schools in which 20 students of the industrial classes are satisfactorily taught, and many other proportionate grants. Besides this, prizes are given to pupils, and in this wise not only the pupil is encouraged, but the teacher is made to feel the effect of the proficiency of those who are under his instruction in the pecuniary results from grants by the Government.

One good provision to emulate the pupil is, that students of schools of art who propose to become teachers, and who have taken the first certificate of the third grade, are eligible to compete for admission to the National Art Training School of South Kensington, with a maintenance allowance of \$4.86 weekly, which may be increased to \$8.50 by their acting as monitors, &c.

These students are also allowed traveling expenses to South Kensington. The course of study consists in ordinary elementary drawing, modeling, perspective drawing from cast figures and life, mechanical drawing, designing, pottery painting, and painting from life on paper and flowers, and landscape painting.

The schools of art are entitled to borrow from the South Kensington Museum and Library objects of decorative art, drawings, oil paintings, prints, books, &c., for exhibition and for use as examples under the regulations.

Students of schools of art may compete for national scholarships of the value of \$4.86 to \$9.73 per week, tenable at South Kensington for one, two, or three years.

I have given some of the principal features, an outline, of the system governing technical art instruction. Enough can be learned, however, to understand the opportunities given to an industrious youth to raise himself in life, and to the children of the working classes in general to get practical knowledge of the higher atmosphere of their future trade. In the art school of Hanley I have seen some very fine pieces of modeling done by pupils, the designs, as well as the whole execution of the work, done by the same hand.

With these earnest endeavors of all classes to join hands in the effort of attaining the highest efficiency, and thereby infuse the manufacturing industry, the only force which can give it continued success, the potters have certainly a greater guarantee for lasting prosperity in hand than if they trusted to Government aid of another nature than that granted to them in educational support.

COST AND MODE OF LIVING.

Rents are very low indeed. An ordinary cottage of brick, with cellar, two rooms, and a kitchen on the ground floor, one large bed-room and two small ones on the upper floor, a paved yard and out-house, rents for 85 cents per week, or \$44.28 per year; if of old build, at 73 cents per week, or \$37.95 per year. To this must be added \$1.62 for water rates and \$3.65 for local rates, which brings the total up to \$49.55 and \$43.22 respectively. Taxes and rates are assessed on the occupier and not on the owner. This system of levying taxes has the advantage of making the working man an interested observer of public administration, as he knows and feels he is a direct contributor to the support of the Government.

I have taken the account of a working man's family. The family consists of father, mother, and ten grown children. Four of them are away and six live with the parents. The father is sixty-two years of age, but still works at his trade, that of a dishmaker. At his age, of course, he cannot work as at his best, though he is very vigorous yet.

That he raised so large a family and gave his children a good education certainly speaks for his worth and of the hard struggle of by-gone days, when all these many mouths had to be filled by the father's own exertions. Now his task is easier, as they all contribute to the general support.

The eldest daughter is the head of an art class in one of the artistic potteries. That is to say, she superintends and teaches, in one of the factories, a class of forty young girls in the art of pottery painting. Another has just gone through a female college, and occupies now the position of teacher at some institute, while a third one is a dressmaker, but only occupied during part of the year. The whole house and household had an air of neatness and comfort about both gratifying and pleasing, as was also the manner of speech and of conversation, denoting great intelligence and acquaintance with general affairs. The parlor was well decorated with artistic pottery, and had a small upright piano.

(One potter, still working very steadily at his trade, that of a mold-maker, has lately put up a row of houses from his savings, largely helping his income by his musical talents.)

	Per week.
The father's income now is.....	\$3. 89
The eldest son pays board.....	2. 92
The three daughters pay \$1.46 each, or.....	4. 38
The youngest daughter, 16 years.....	73
The youngest son, between 14 and 16.....	73
Total income.....	12. 65

The general house expenses are as follows : The house is a larger one than described above, having an extension in the rear, and consequently two more rooms. The rent for this is \$1.22 per week, or \$63.26 per year. Add to this—

Poor rate	\$4 86
Highway rate.....	1 95
Lighting rate.....	85
Sewerage rate.....	1 95
Sanitary rate.....	61
Total	73 48

Or an average of \$1.41 per week.

	Per week.
One sack of wheat flour of 16 stones, \$5.35 (14 pounds to stone=224 pounds), lasts five weeks and averages.....	\$1 07
Beef, mutton, 16 to 20 cents per pound	2 92
Sugar (bought 60 pounds at a time), 5 pounds at 5 cents	25
Potatoes (bought 9 bushels, which lasts about 6 months).....	14
Other vegetables	06
Butter, cheese, and bacon	1 46
(Uses best butter, 28 cents per pound in summer, 40 cents per pound in winter; cheese, 14 cents per pound.)	
Eggs	12
Milk.....	61
Tea and coffee	61
Gas per year, \$7.29	14
Coal, one ton a month in winter, at \$2.92 per ton, say for the year round	24
Clothing for father, mother, and two youngest children and sundry household goods.....	75
Total	10 03

Leaving a balance of \$2.43 for extras or sickness.

Breakfast consists of tea and coffee, bacon, bread and butter, and in summer time eggs; dinner consists of beef, mutton, or pork, and vegetables and potatoes; and tea and supper consist of tea with bread and butter and cheese.

The bread is home-made, being cheaper and much superior to baker's bread. As I staid to tea, I can testify to its excellent quality as well as also to that of the butter used, thus having proof of the correctness of the remarks made previously to me by my informant, that they buy no tub butter, but take everything of the best.

The second example is also supplied by a dish-maker, who represents about the general average of potters, their earnings and expenditures at the present time. All expenses are divided pro rata weekly.

Bakers' bread is sold for 9 cents the 4-pound loaf, with the Government guarantee of weight.

Estimated expenses of a working potter per week, having a wife and three children.

Items of income and expenditure.	Amount.	Items of expenditure.	Amount.
INCOME.		Meat, 5 pounds, at 14 cents	\$0 70
Husband's weekly earnings	\$7 30	Sausage or fish, &c	12
Wife's weekly earnings	1 46	Potatoes, 1 peck	16
	8 76	Other vegetables	10
		Milk	21
EXPENSES.		School wages and books	08
Tea, $\frac{1}{2}$ pound, at 60 cents	30	Boots and shoes	48
Sugar, 4 pounds, at 5 cents	20	Husband's clothes	39
Coffee, $\frac{1}{2}$ pound, at 40 cents	10	Wife's clothes	18
Flour, $\frac{1}{2}$ stone, at 40 cents	05	Children's clothes	24
Lard, $\frac{1}{2}$ pound, at 12 cents	06	Rent of house	85
Washing soap, 1 pound	06	Gas	07
Soft soap, $\frac{1}{2}$ pound	03	Poor rate, annual	\$3 45
Soda, 2 pounds	03	District rate, annual	3 95
Washing powder	08	Cemetery	75
Starch	02		8 15
Blue	01		16
Candles, $\frac{1}{2}$ pound	05	Sick club	24
Pepper, salt, &c	02	Tobacco and beer	30
Vinegar	02	Church or chapel	06
Rice or sago, 1 pound	06	Wear and tear of bed-clothing	06
Molasses, $\frac{1}{2}$ pound	04	Wear and tear of cooking utensils	02
Cheese, $\frac{1}{2}$ pound	18	Coals and firewood	37
Bacon, 1 pound	12		7 14
Six 4-pound loaves, at 9 cents	54	Balance	1 50
Butter, $1\frac{1}{2}$ pounds, at 32 cents	48		8 64

NOTE.—Allowance should be made for any sundries omitted.

Special workmen's tickets are given out by the railroads, good for two trips on each of six working days of the week at a very cheap rate. So, for instance, from Fenton to Tunstall, a distance of six miles, the charge is 43 cents per week (other distances in proportion), or for each of the twelve trips for which the ticket is good about $3\frac{1}{2}$ cents. The ticket can be used on any train on the main or loop line which runs through the potteries.

The condition of the potters can be declared to be as one of general thriftiness.

To the acquisition of houses they are assisted by numerous building-loan societies. These societies are at the same time a kind of savings bank for the people. The shares are £50 shares. Each member can take one or more shares or part of a share, as he or she sees fit.

At the expiration of the term of years for which he has paid his regular installments the member is entitled to draw the amount of the share for which he has subscribed. For arrears in payments a fine is imposed. The term is usually a ten years' term. Sixty cents is paid for each full share as initiation fee, and proportionately for parts of shares, and regularly for and during the full term of ten years 36 cents per share per week. If the shareholder has paid up and desires to leave the amount due him with the building society, he is paid interest at the rate of $3\frac{1}{2}$ per cent. per annum. Loans are advanced on good security to those who wish to build, at the rate of £50 per single shareholder.

The repayments of such loans include interest payments, and run from the date of the completion of the advance to the close of the period for which the loan is taken, and are 65 cents per week if the loan is to be repaid within the term of ten years.

The terms are of a nature that they invite workmen to be provident, and, as the result shows, with excellent success.

I am told by good authority that the greater part of the shareholders own their own houses. The houses which I have described as being at a rental of 85 cents per week cost about \$730 to put up, including building lot.

I have endeavored to get an official account from the records of the number of potters who own houses they occupy, but have not been able to succeed.

The Burslem and Tunstall building society last year disbursed \$121,546, of which \$40,820 was on withdrawn shares; \$63,559 was advanced on mortgage security in building; \$15,762 for interest and bonuses on paid-up shares; and \$1,952 covered all expenses, including rent and salaries of management.

BOARD OF ARBITRATORS.

In the great labor problem nothing has been so conducive to smooth the rough edges and bring workmen and employers to look upon each other with more trust and confidence than had been the case previous to their introduction than the board of arbitration. Like most great labor fields in England, the potteries have their board of arbitration before whom to lay their disputes. After the last strike was settled the ovenmen did not wish to come in again, and as the rule is that all have to be covered by the jurisdiction of this court, their refusal virtually disrupted the organization. Within a month, however, of the date of this report the board has been reinstated, and Mr. Thomas Hughes has been chosen umpire. The growing importance of such matters to the working people of the United States in general makes it advisable to inclose with this report a full copy of the rules of the "Staffordshire potteries board of conciliation and arbitration."

J. SCHOENHOF,
Consul.

UNITED STATES CONSULATE,
Tunstall, February 18, 1886.

STAFFORDSHIRE POTTERIES BOARD OF CONCILIATION AND ARBITRATION.

RULES.

(1) That this board be styled the "Board of Conciliation and Arbitration" for the Staffordshire china and earthenware manufacturers.

(2) That the leading principle shall be the continuance of work at existing prices pending any dispute. The decision of the board or umpire to date backward to the time of the appeal being made.

(3) The object of the board shall be to arbitrate on wages or any other matters affecting their respective interests that may be referred to it from time to time by the employers or operatives, and by conciliatory means to interpose its influence to prevent disputes and put an end to any that may arise. It is, however, understood and agreed that under these rules neither employers or operatives shall arbitrate on the following questions: (1) Good from oven; (2) limitation of apprentices, except in the oven branch, and then only when a change is proposed to be made during the year at a manufactory in the proportion of apprentices to journeymen working together in a set; (3) alteration of trade rules.

(4) That the board consist of ten employers and ten operatives, four of each to form a quorum; and the first board shall hold their first meeting as soon as practicable after their appointment; the operatives to be elected by their own body, and the employers by their own body; the members of the board to serve for one year, and to be eligible for re-election; the new board to be elected in the month of July in each year.

(5) That the board shall, at its first meeting in each year, elect an umpire, president, and vice-president; also two secretaries, one for the employers and one for the operatives, who shall continue in office one year, and be eligible for re-election.

(6) That the board shall meet for the transaction of business once a quarter, namely, the first Monday in the months of October, January, April, and July; but, on a requisition to the president, signed by three members of the board, specifying the nature of the business to be transacted, he, or in case of his absence, the vice-president shall, within seven days, convene a meeting of the board. The circular calling such meeting shall specify the nature of the business for consideration.

(7) A reference to the board may be made by either party to any dispute, but the primary obligation to appeal to the board shall rest upon the party who wishes to alter existing arrangements, subject however to rules 15 and 21.

(8) That no employer or operative shall be entitled to appeal to the board (except with the consent of the board), unless he has been a subscriber from the commencement of the current year of subscription.

(9) The parties to any dispute intended to be submitted to the board shall, if possible, agree to a joint written statement of their case; but if they cannot agree, a statement in writing on behalf of each party shall be made, and every such statement shall be sent to the secretaries at least two days prior to the board meeting. Each party shall have power to adduce oral evidence before the board.

(10) The umpire shall preside at the sittings of the board when cases are referred to it for arbitration which concern the whole trade or affect the interest of a whole branch. The question in dispute shall be decided by the umpire, whose award shall be final and binding on each party.

(11) That the president shall preside over such meetings of the board as are not convened for the purposes of arbitration, and in his absence the vice-president. In the absence of both president and vice-president a chairman shall be elected by the majority present.

(12) That when at any meeting of the board the number of employers and operatives is unequal, all shall have the right of fully entering into the discussion of any matter brought before them, but only an equal number of each shall vote. The withdrawal of the members of whichever body may be in excess to be by lot.

(13) That the parties to any dispute which has been submitted to the board shall be bound by its decision.

(14) That each party shall pay their own secretary and separate expenses, but the joint expenses of the board shall be borne equally by the employers and operatives.

(15) A committee consisting of four, that is to say, two employers and two operatives, shall inquire into any dispute that may arise at any individual manufactory and that does not affect the interest of a whole branch, and such committee shall use its influence in the settlement of disputes, and have power to make an award. Before such committee shall commence to inquire into any dispute it shall appoint a referee, before whom the case shall be laid by such committee in the event of its being unable to adjust the business referred to it. The decision of the referee shall be accepted by both parties to the dispute. If such committee shall not be able to agree upon a referee the umpire of the board shall make the appointment, and the case shall proceed. Such committee, however, shall not deal with any question which cannot be dealt with under these rules.

(16) That if any one or more of the board shall be immediately affected by the dispute they shall not be appointed upon the committee referred to in rule 15.

(17) That the board shall recognize the trade rules set forth in the schedule as binding upon the parties to any dispute, and for the regulation of the trade.

(18) That no alteration or addition be made to these rules, except at a quarterly meeting, or special meeting convened for the purpose. Notice of any proposed alteration shall be given in writing to the secretaries one month previous to such meeting, and the secretaries shall give one week's notice thereof to each member of the board.

(19) That it be an understanding, in connection with the proceedings of the board, that while the general wages question, as it relates to the condition of the markets, shall be arbitrated upon (at Martinmas) as one case for all the trade, except ovenmen, each branch shall have a right at such arbitration to make special reference to any question or subject that especially concerns its interests or modes of working.

(20) That when a general arbitration shall take place involving a reduction or increase of wages, the case in respect of all branches, except ovenmen, shall be dealt with as one, and when the umpire has finished the hearing of such case he shall then consider the case of the ovenmen, and give to them a separate award.

(21) When there is no general arbitration at Martinmas affecting the interests of the whole trade, any two branches, but not more, may make a separate and special appeal to the board for change in prices on any special ground that may seem to them to justify such a change, and in like manner the employers shall be at liberty to claim an arbitration in case of there being a dispute with any two branches. Any dispute

affecting more than two branches shall be dealt with as a subject for general arbitration.

(22) That the umpire shall have full opportunity to verify any figures or statements made in evidence, providing that such verification be not allowed to interfere with, or expose, the private business of any firm; such verification shall be made through a sworn accountant, appointed by and responsible to the umpire, and shall be disclosed to no other person.

SCHEDULE.

TRADE RULES.

(1) That in the absence of any specific agreement to the contrary, the recognized custom of the trade shall be, that four weeks' notice be given at any part of the year by an employer to discharge an operative, or by an operative to leave an employer.

(2) That the prices of labor mutually agreed upon at Martinmas in one year shall not be subject to alterations by either party until the Martinmas following.

(3) That if new articles or new modes of working be introduced at a manufactory during the year, any disagreement as to price shall be referred for settlement to a committee to be appointed under rule 15.

(4) That if either employer or operative intends to propose any alteration in prices or trade usage, he shall give to the other at least six weeks' notice in writing previous to the ensuing Martinmas, and such notice shall specify the alterations proposed; and if the parties concerned cannot agree to such alterations, the dispute shall be forthwith referred to the board. If the board's decision cannot be obtained by the commencement of the trade year, the employer shall continue to employ the operative, and the operative to serve the employer, according to No. 2 of the board's rules, and the decision when given shall govern prices and trade usages for the trade year. If no notice of alteration be given within the prescribed time, the prices and trade usages shall continue for the ensuing year without alteration.

(5) When changes are proposed by employers at Martinmas which shall lessen the price paid by them for oven work, whether by reducing ovenmen's wages or by the substitution of less priced hands, disputes arising from such proposed changes shall be considered legitimate questions to bring before the board, and in like manner, if the operatives ask for an increase in the price paid for oven work, it shall be considered a subject for arbitration.

That the usages in the biscuit warehouse shall be:

(1) That operatives be paid for all ware which is spoiled through causes that do not come under their control, or that cannot be traced to bad workmanship; but that no payment be made for bad work which can be proved to be the fault of the operatives.

(2) That in all cases where defective work can be made good by a second firing, the operative shall be allowed that privilege.

(3) That all ware be counted to the operative before it be allowed to be taken out of the biscuit warehouse, and not later than the first full working day after drawing, but at manufactories where there is one biscuit oven only, an additional day shall be allowed.

DUNDEE.

REPORT OF CONSUL ADAMS ON JUTE INDUSTRY OF DUNDEE.

The annual report from this consulate, which has already been forwarded will have shown the Department the condition of trade in this district for the year ended September 30, 1885. During that period no new feature had been developed, and there had been very little, if any, relief from the depression that has existed for several years, and that has now become so serious as to cause the greatest alarm. As will appear from that report, the trade in jute and its fabrics is the chief one in which Dundee is concerned with the United States. Of the declared values of goods exported hence to the United States in the year 1885, of somewhat over six millions of dollars, nearly 70 per cent. was of jute and its manufactures. Following this was the value of linens, which was about 25 per cent. of the whole. These two fabrics accordingly constitute about 95 per cent. of the values of all the exports to the United States.

THE JUTE PLANT.

The jute plant is native to almost every part of British India, but is chiefly grown in the province of Bengal. It belongs to the *Corchorus* family, of which there are two sorts which are closely allied, and which are known botanically as *Corchorus olitorius* and *Corchorus capsularis*. In their growth and products there is very little difference. Both are herbaceous annuals, and range in growth from five to ten feet in height, according to soil and mode of cultivation. The stem is straight and cylindrical, but branches near the top, and is headed by a small yellow flower. It blooms in the rainy season. The plant is edible, and is said to be still used in Egypt and Syria as a pot-herb, and its young leaves as a kind of spinach. The antiquity of its use in this respect, as well as an article of manufacture and commerce, is known to be very great.

For the cultivation of jute, high lands and those not liable to overflow are usually sought. The seeds are sown in April or May, and the growth is made mostly during the rainy season. A fine and well-manured soil is required and a careful cultivation, very similar in most respects to that employed with flax, and, as with the latter, the success depends in very great measure upon the care bestowed by the cultivator. The seed is sown broadcast and is harrowed in. If the seed is sown thinly the plants run to height, and the fiber is hard and harsh, but the yield is heavy; if sown thickly, the fiber is soft, but the yield is much less. The medium between thin and thick sowing produces the better result in both respects. The plant is sensitive, and may easily be damaged by excessive moisture, though considerable moisture and heat are demanded for the best growth. After one weeding, which is done when the plant is a foot and a half high, the growth protects itself. The necessary heat and moisture are sometimes obtained artificially on dry lands. The plots of ground are small and are surrounded by shallow dikes, the water in which is allowed to run over the tops of the embankments. The temperature of the water, under the Indian sun, rises to 100° or more. Under these conditions the plant is rapidly forced, and attains a growth hardly possible under the usual modes of cultivation. But when the soil is damp and cold such irrigation is not employed, and would be injurious rather than favorable. If the rains are heavy the water flows over the dikes before it has become sufficiently heated; and even when the rain is not excessive the plant receives but little stimulation or benefit; and when the weather is dry the dikes retain too little depth of water, and but little advantage results. Generally a warm summer and moderate rains supply the most suitable conditions. The plant matures in about one hundred days after the seed is sown, and must be cut shortly after it has flowered, which is from the middle of July to the middle of September.

RETTING AND STRIPPING.

When the plants have ripened they are cut down to the roots, the tops are clipped off, and the stalks are tied into bundles of from fifty to a hundred in each. They are then put to steep under water for eight or ten days, being held down by weights until they are sufficiently retted. In the mean time they are closely watched to see that the proper stage of decomposition has been reached. When the stalks and fibers have become soft they are ready for removal from the water. This process, as in the case of the same treatment of flax, is one that demands much care and good judgment, for if allowed to remain in the

steep too long, even for a day or two, the fiber is weakened, if not destroyed. In jute prepared for export the retting is continued to the utmost limit of time, in order to secure the softness and delicacy of fiber demanded in the trade; but for native consumption the fiber is not so fine or clean, and has a greater strength and durability.

In separating the fiber from the bark after retting, the native worker unties the bundles and takes as many of the stems in his hand as he can grasp. He then removes a small part of the bark from the ends near the roots, and strikes the stalks against a board held before him in a slanting position, and in this way strips the bark from end to end without breaking either stem or fiber. He then proceeds to wash the fiber, by swinging a large handful around his head and dashing it repeatedly against the surface of the water and drawing it through towards him. If this is carefully done the fiber is well cleaned, and needs only to be examined for any extraneous matter that may have clung to it. After being wrung out, the fiber is hung up on lines or spread out on bamboos to dry. If well cleaned, very little of the husk or stalk is left in the fiber. The product is about seven hundred pounds an acre.

The care taken in these preparations has greatly to do with the grade of the fiber in the market. While a better cultivation—which is said even yet to be carried on after very old and imperfect methods—would no doubt increase the yield, yet the price obtained will largely depend upon the condition of the fiber when offered for sale. What is sought for from the growers is a fiber of a pearly white in color, uniform throughout the whole length, and fine and strong in texture. But much of it, as it appears when offered to the trade, is greatly discolored, and so rotted, and consequently weak, as to be unfit for spinning, and in many cases it is so soiled with dirt as to be greatly depreciated in value.

BLEACHING AND DYEING.

When first prepared the fiber of jute is of the pearly-white color above referred to, but it gradually changes to a fawn color, and later to a light brown. The causes of these changes are to be attributed to the inherent qualities of the material, and they give rise to the difficulty which is found in all attempts to bleach it. In this respect it differs from the fiber of flax. It may be said here that the fiber is not the only valuable and useful part of the jute plant. The stalks are often long and straight, as well as pliable and light. They are used in many ways, as for fences, basket work, and in various small wares, and for fuel.

The natives of India have long been acquainted with the art of dyeing, and have applied it with some success to jute yarns and cloth. It readily takes colors of all shades, but the common dyes fade quickly and become faint and dull. The difficulty lies in the peculiarities of the fibers. These do not divide and subdivide as minutely as those of flax, and they are drier and do not absorb moisture as readily. Dyes accordingly strike more upon the outside and fail to penetrate the fiber. A more complex process is therefore required to cause the absorption of the coloring matter and to fix the colors. This has now been accomplished in a great measure, although some colors are not as durable as others, or as they are found to be when used on flax.

As has been said, difficulty has been met in the attempt to bleach the jute fiber and bring it to a full white without injuring the strength. If the jute be fresh and of good quality, a fair degree of whiteness can be

attained, but older fiber soon turns brown, and the bleaching to a white becomes uncertain. The processes both in bleaching and dyeing do not differ greatly from those in bleaching and dyeing the flax fiber, and in the latter they include colors of every description.

SPINNING.

The greater part of the supply of jute for commercial purposes is grown, as has been said, in Bengal. Apart, however, from the quantity exported and that used in the mills at Calcutta and elsewhere in India, the spinning of the yarn and weaving of cloth constitute the great domestic manufacture of the eastern part of that territory. It extends itself among all classes, and is found in every household of the Hindoos, but not among the Musselmans, who spin cotton only. It is both a regular industry and the occupation of leisure. The spinning is done on a simple spindle, which is turned upon the thigh or the sole of the foot, and by a wheel on which the thread is wound. The raw material is found in the house of every laborer and farmer, where the coarse pack-thread is prepared for the making of ropes and used for manifold domestic purposes. A finer thread is also spun for making cloth, and as there is a loom in nearly every house, much of the cloth is woven by the women of the lower classes. The cloth is of various qualities, and includes the clothing of the family, especially of women, who seldom wear any other material. But it is also made into coarse fabrics, as bedding, rice and sugar bags, sacking, pack-sheeting, &c. Some of the yarn is dyed and woven into cloth for various uses, a portion of which finds its way into other districts. The short staple, or common grade of jute, is generally used in the domestic manufacture, the finer and long stapled being reserved for the export trade.

JUTE INDUSTRY OF DUNDEE.

Dundee is now and has for many years been the chief seat of the jute manufacture in the United Kingdom. Although the manufacture was attempted in England—notably at Abingdon—it seems not to have been followed up or prosecuted to any great measure of success. It is due to the Scotch foresight and tenacity of purpose, as well, perhaps, as to their somewhat more enterprising and venturesome spirit, that the experiments with the fiber were continued, in the midst of great doubts and discouragement, and these through many years, until the manufacture became fully established. A few mills exist at Glasgow, and in England and Ireland, but the number is small and the products comparatively unimportant. This branch of manufacture is nevertheless of somewhat recent origin. It has no such antiquity or history as belongs to flax and its products in this country. It has had its practical beginning within fifty years past, and the greatest development has taken place within thirty years. It is recorded that in the year 1796-97 18 tons of jute were brought from Calcutta to London, 6 tons to the United States, and 39 tons to Hamburg. At the instance of the East India Company, attempts were made about 1803 to find a substitute for hemp, and farms were established in India for experimenting with the various fibers of the country, among them the several species of jute. These experiments appear to have been given over by 1811, not however before much valuable information had been obtained. From time to time small lots of jute were brought to England for trial, particularly for rope-making, but the result seems not to have been en-

couraging. Its qualities and capabilities remained unknown or neglected for many years, and little or no progress was made in its manufacture. Such use as there was for it was confined mostly to the region of London, and to the making of ropes, door-mats, and such articles. This is perhaps surprising when it is considered that it was well known that the fiber had been in use for centuries in India, and some of its products even exported to other countries. As far back as 1796-'97 the United States had imported directly from Calcutta 39,000 gunny-bags. There appears no record of any trial of jute in Dundee earlier than 1823 or 1824. The result was unsatisfactory, the fibers being found so hard and dry as to resist combination into a yarn of any strength. A little later, however, another spinner succeeded in producing from it a web for padding-canvas and for nail-bagging, and also some other coarse fabrics. There seems to have been a belief, and a consequent dislike to its use, that the fiber would not stand moisture, a belief which it has taken many years to overcome, although it is now known that jute goods resist the effects of moisture longer than most other textile material.

It may be said that no decisive and important progress had been made in this manufacture until about the year 1838. Apart from the prejudice against the fiber above mentioned, which was held by spinners, manufacturers, and consumers, the machinery then in use, which was designed solely for flax spinning, was poorly adapted and not readily changed to the spinning of jute. Nevertheless in addition to the coarser goods, as sacking, door-mats, and the like, some carpeting and other finer articles had now been made; and it continued to be spun, often mixed however with flax and tow, though chiefly used for the heavier yarns for webs of bagging and hessians. The prejudice referred to was for a long time so strong that it was difficult to find a sale for goods suspected of having a mixture of jute unless a warranty was given that they were free from it. It was, however, used by stealth, and a very considerable quantity of mixed yarn was spun. The manufacture was slowly gaining a footing. The first spinning of pure jute and weaving it into cloth appear to date from 1833, and after 1834 the various kinds of jute yarns took their place openly in the Dundee market. If the manufacture had now become somewhat advanced, yet it still remained more or less uncertain and wavering in result; and this condition continued until 1838, when the Dutch Government, at the instance, it is said, of a Scotch spinner, decided to substitute jute yarns for those made of flax-tow in the manufacture of coffee-bagging in their Eastern colonies. The impulse then given to Dundee in the spinning of this fiber was never lost, and since that event the rapid development of the industry takes its date.

IMPROVEMENTS IN MACHINERY.

From this time also began the alterations and improvements in machinery for jute spinning, as well as enlarged experiments in the modes of treating the fiber. The machinery was at first, as has been said, that used in flax spinning, which needed to be made stronger and in some respects modified for use with jute. This circumstance had had its effect in the past in retarding the development of the manufacture, since spinners were unwilling to make the alterations until it had been clearly shown, on the one hand, that the manufacture was likely to be profitable, and, on the other, that the supply of jute in the future (as to which little seems then to have been known) would justify the venture and

expense. Those, however, who persevered and entered into the trade with energy, soon discovered the advantages and were rewarded with signal success.

While the appearance of the jute fiber was attractive, it was found difficult at first to spin it with any satisfactory result. It was hard and harsh, and with little moisture, and required larger and stronger machinery. The fibers, differing from those of flax, had no tendency to twist or combine with each other, but rather to separate from the body of the thread and to catch on anything they came into contact with. The friction of the threads upon each other in the process of weaving drew out the loose threads and broke the yarn, and made the weaving both slow and tedious. To meet these drawbacks and to soften the fiber, as well as smooth and compact it, experiments were made in the use of oils, mostly whale oil, and later in the use of oil and hot water. The success was such that the difficulties were very largely overcome, and this process is the one now employed in the manufacture, to the exclusion of any other. In the presence of this difficulty in making the yarn, and until it was removed, jute was principally turned into wefts for carpeting, and when so used the yarn was sized or starched before weaving. This process was so slow as to greatly interfere with any rapid production of goods, and was succeeded after trials and experiments by that of giving a hard twist to the fibers, and of spinning them in a green state.

JUTE MANUFACTURES.

The variety of goods now produced from jute is very great, and includes sacking, bagging, hessians, sheetings, hop-pocketing, osnaburgs, ducks, carpeting, and other articles. In weaving cloth the yarn is mostly used in the natural color and state, but in many kinds of goods it is milled, creamed, and dyed, and in a few cases bleached. The manufacture has adapted itself to every taste and requirement, so far as the material has been found capable, the extent of which is seen in the wonderful development to which it has attained.

GROWTH OF THE INDUSTRY.

For many years the manufacture of jute was confined to Dundee and its neighborhood. There were elsewhere very few mills and none of such extent as to interfere with what was substantially a monopoly. Great fortunes were made, and the town grew rapidly into one of commercial importance. The particulars of this growth and of the increase in the trade are given in the tables that follow. One result of the Crimean war, beginning in 1854, was to close the hitherto great supply of cheap flax from Russia to the manufacturers of the United Kingdom, and it gave to the trade in jute its second powerful impulse. Before that period the cheapness of flax had had more or less effect in retarding the manufactures of jute, principally by supplying certain classes of goods to the manufacture of which jute was afterwards found to be suitable, but which so far had been made of flax alone or by the union of flax and jute. Under this impulse the manufacture was enlarged to an extent hitherto unthought of. Many new mills were built and old ones increased in capacity, and machinery was rapidly improved. The trade became at once both largely extended and very profitable. As the manufacture had taken its rise in Dundee, so here the greatest and most rapid development took place. The statistics of the steady increase of the manufacture will appear from the table given below, which shows

the imports of jute into Dundee for the years named, up to and including 1885:

Year.	Tons.	Year.	Tons.	Year.	Tons.	Year.	Tons.
1838.....	1, 136	1860.....	36, 965	1869.....	82, 379	1878.....	113, 927
1840.....	2, 745	1861.....	35, 716	1870.....	81, 740	1879.....	132, 205
1845.....	8, 213	1862.....	38, 277	1871.....	102, 844	1880.....	103, 438
1850.....	14, 080	1863.....	46, 983	1872.....	127, 190	1881.....	147, 622
1855.....	25, 894	1864.....	56, 404	1873.....	143, 150	1882.....	153, 141
1856.....	31, 081	1865.....	71, 702	1874.....	117, 375	1883.....	205, 809
1857.....	24, 342	1866.....	52, 179	1875.....	113, 930	1884.....	109, 777
1858.....	30, 086	1867.....	63, 672	1876.....	118, 571	1885.....	172, 223
1859.....	38, 405	1868.....	58, 474	1877.....	80, 065		

The development of the trade is clearly exhibited by these statistics. Between 1838 and 1840 it was more than doubled, though very limited. In 1845 the increase was a quadruple of 1840, and a more or less steady increase continued up to 1873, in which the importations exceeded 143,000 tons. Since then the quantity has varied from year to year, but not very considerably decreased; and it is to be noticed that in 1883, in the midst of great depression, the importations exceeded 205,000 tons.

During the Crimean war, as has been said, and the consequent failure of the flax supply from Russia, jute fabrics were able to substitute themselves for those of flax in a certain measure; and they so fixed themselves in public use in this period that the advantage then gained has never been lost, and they seem now to have permanently supplanted many of the rougher flax manufactures, and even to have secured a foothold among some of finer goods.

The American war again stimulated production. During that period the consumption of jute goods was further very largely increased. The statistics show that the imports of raw material rose from 35,000 tons in 1861 to 46,000 in 1863, to 56,000 tons in 1864, and to 71,000 tons in 1865. On the close of the war the quantity fell somewhat, but still presented a large increase over the years before the war. In the mean time the manufacture had become firmly established, and was soon so largely developed that the average importations for the ten years ended with 1885 exceeded 151,000 tons a year, of which the importation directly from India to Dundee was over 133,000 tons a year.

The following statistics are interesting as exhibiting the advance made both in the spinning and weaving of jute in the United Kingdom, and as showing the number of persons employed in the industry:

Country.	1870.	1874.	1878.	1885.
Jute spindles:				
Scotland	94, 520	185, 419	183, 056	225, 399
Ireland	4, 194	13, 738	5, 858	5, 270
England	10, 286	21, 754	23, 762	22, 510
Total	109, 000	220, 911	212, 676	253, 179
Doubling spindles:				
Scotland	5, 804	7, 658	5, 855	10, 030
Ireland	30	338	230	200
England	322	1, 278	1, 407	794
Total	6, 156	9, 274	7, 492	11, 024
Looms:				
Scotland	3, 744	8, 325	10, 009	10, 856
Ireland	108	347	222	232
England	478	927	1, 057	995
Total	4, 330	9, 599	11, 288	12, 083

Country.	1870.	1874.	1878.	1885.
Persons employed:				
Scotland	14,911	30,893	30,401	36,200
Ireland	737	2,094	933	961
England	1,932	4,333	4,961	4,444
Total	17,570	37,320	36,294	41,604
Children employed under 13 years:				
Scotland	574	3,620	2,877	4,123
Ireland		12	22	7
England	24	361	623	191
Total	598	3,993	3,522	4,321

An analysis of these tables shows a steady growth of the jute manufacture in this district, even during a long period of depression. The volume of jute goods has constantly increased, but the prices obtained have become scarcely remunerative. The tables also show that there has been a small decrease both in England and Ireland, while in Scotland the number of spindles has risen in 1885 to some 40,000 over 1878. In weaving, also, the increase has been wholly in Scotland. It does not appear that the industry here is waning, or that it is being transferred to the Continent, as has been feared. It has, however, been most seriously affected by the growth of jute manufacture in India, the progress in which is remarkable, and such as to cause grave disturbance and doubt for the future.

INDIAN COMPETITION.

The advantages of nearness to the raw material and of the cheap labor led to the establishment of jute works in India about the time of the American war. At this period the industry in Dundee had become greatly enlarged and very profitable; and in addition it was recognized that the industry had developed into a settled and permanent one. The mills in India—mostly about Calcutta—were organized on British capital and by British managers, not a few of whom were trained in the Dundee trade; and such development was made that in 1873 the exports, chiefly of gunny-bags and jute cloth, reached over \$4,000,000 in value. The number of spindles, which in 1878 were 38,046, had increased in 1883 to over 95,000, and the looms from 4,094 to nearly 6,000. These goods find their principal market on the Pacific coast, but in some measure also in Australia. Up to about 1875 Dundee had enjoyed the monopoly in the California market for jute bags, and many millions of them were annually shipped hence directly to San Francisco and other ports on the Pacific, but it has now so entirely lost control of the trade through the competition of the Indian manufactures that scarcely an invoice of such goods now leaves this port. The Indian goods have completely absorbed the market.

DEPRESSION.

In closing this report some further reference may probably be made to the condition of the trade as it appears at the close of the year. There is no doubt as to its continued depression as respects the profits from manufacture. Yet the volume of goods manufactured has not diminished. This, if it has not exceeded, has at least equaled that for the year 1884, but there are no indications of a rise in prices. The effects of competition at home and in India and on the Continent have never before been

felt so keenly, and in the desire to retain the custom manufacturers here have made concessions in prices until no margin of profit has been possible. There is no doubt indeed that some heavy losses have been met with. Between Dundee and Calcutta the production has now exceeded the consumption, and at the latter place the mills are now running on short time. A similar movement has been discussed also in Dundee, but as yet without any agreement being come to among the principal mills. Some failures of importance to the trade have lately occurred, with the result of closing the mills and of throwing about a thousand workers out of employment. But as yet no concerted action has been taken—nor a disposition shown towards it—by which the production here would be diminished.

The past year has shown a new feature in that the volume of exports exhibits no considerable increase over previous years. Heretofore a market has always been found for goods, whatever the price, and the total of exports for one year has uniformly exceeded that for the previous year. This has now apparently ceased to be the rule. In this respect, however, Dundee is not singular or alone, for the same result has appeared in the trade of the Continent; and reports show that only in two comparatively small markets—those of Italy and Brazil—has there been an increase in jute goods? The price of raw material has in the mean time not declined, while the values of all manufactured goods again decreased. The appearance in the market here, during the year, of Indian-made burlaps gave a very surprising feature to the trade, and indicated to what length competition was being pushed, and how far Dundee had been driven from its former supremacy. It suggested that India had not only entered the markets heretofore largely controlled by Dundee, but had even brought the competition to its doors.

It is probably true, however, that in the depression in the jute trade everywhere prevailing, Dundee has not fared worse, and apparently not so badly, as other countries. None of the great houses have failed or stopped, nor as yet even gone on short time, while in India there have not only been many failures reported, but also many stoppages; and the mills of Calcutta are now running on short time. It is felt, however, that the trade here labors under the disadvantages of distance from the raw material and a cost of labor, from which the Indian manufactures are free. The continental tariffs are also held to be wholly hostile, and greatly to restrict, if not wholly prohibit the admission of Dundee goods. In addition, it is not to be ignored that markets long held, if not controlled by Dundee, have now been freely invaded by competitors, and to such an extent as to cause most serious concern to all interested in the trade.*

A. B. WOOD,
Consul.

UNITED STATES CONSULATE,
Dundee, January 10, 1886.

* The consul acknowledges favors of Mr. A. J. Warden, of Dundee, in the preparation of this report.

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UNITED STATES CONSULAR REPORTS.

REPORTS

FROM THE

CONSULS OF THE UNITED STATES

ON THE

COMMERCE, MANUFACTURES, ETC.,

OF THEIR

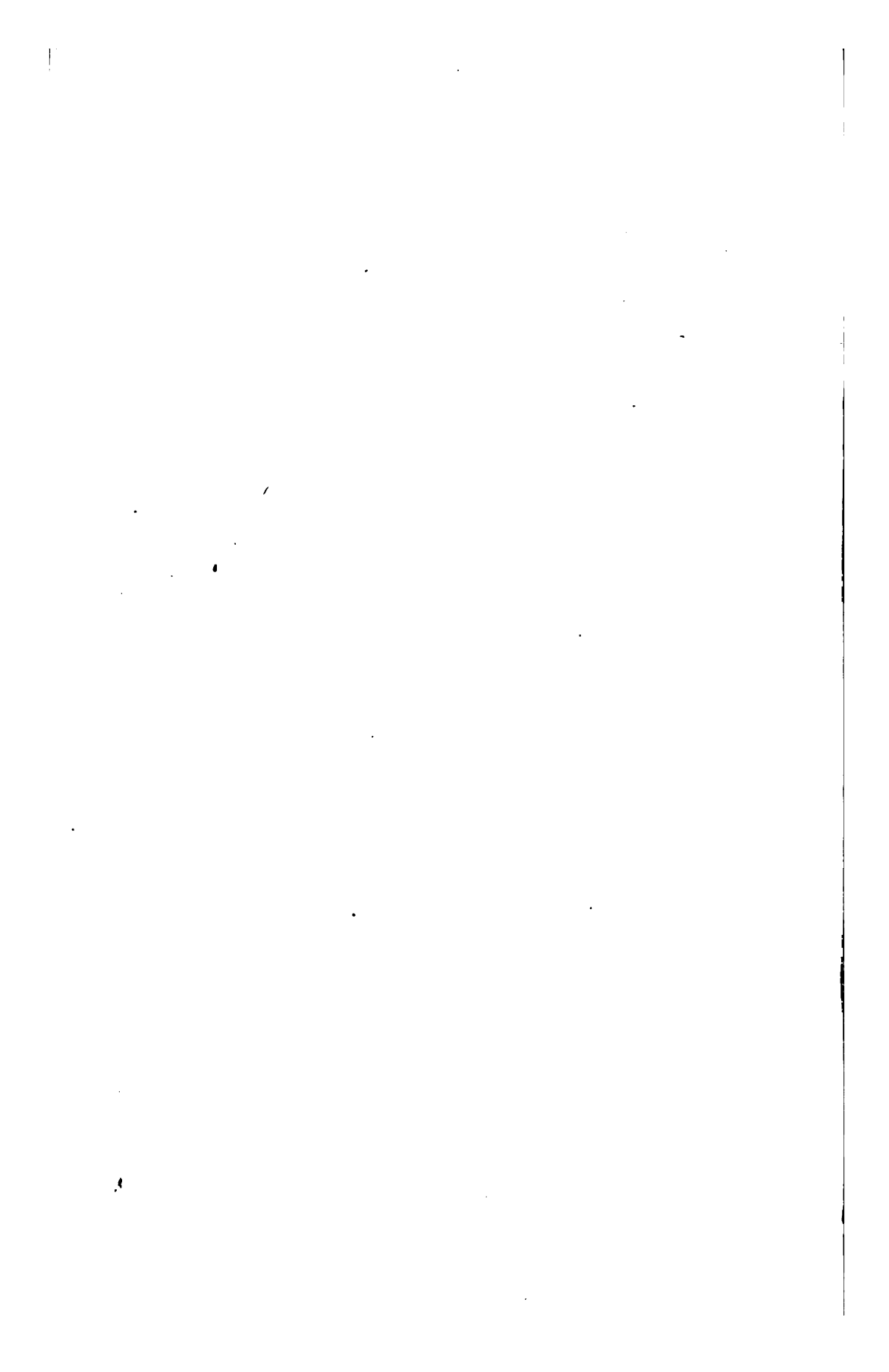
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CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC.

No. 64.--JUNE, 1886.

COAL AND IRON.

REPORT OF CONSUL SCHOENHOF ON THE COST OF PRODUCTION OF COAL, IRON ORE, AND PIG-IRON IN NORTH STAFFORDSHIRE—LABOR COST, ANNUAL OUTPUT, AND NUMBER OF HANDS EMPLOYED IN THESE INDUSTRIES IN GREAT BRITAIN, PRUSSIA, AND AMERICA.

COAL PRODUCTION.

The advantage which Great Britain possesses in iron making consists mainly in the proximity of coal and iron mines. They are often interlaced, and so closely do the seams run that many mine accounts are not kept separated for coal and iron-stone. I have collected some minute data from several of the largest operators in this district. I will give first an itemized account of the totals of the weekly output from one of the works of my first informant, whom I will call A.

No. 1.—COAL AND IRON WORKS OF INFORMANT A.

Product of week ending February 16, 1886.

Product.	Labor cost.	Cost per ton.
5,661 tons of coal	\$4,619 00	\$0 82
1,749 tons iron-stone	2,953 50	1 70
989 tons pig-iron	796 95	81

Labor cost and general cost of production of one ton of coal.

(a) The labor cost of coal is divided as follows :

Mining	66.46	
Yard	1.72	
Repairs	4.10	
Engine drivers and bank wages	3.84	
Pumping water, &c	5.88	
	82.00	

(b) Materials :

Stone and ropes	7.92	
Timber and pit-wood	14.92	
Rails and iron-work	1.74	
Bricks and mortar	1.18	
Castings	1.14	
Fuel for engine and hauling	9.50	
		36.40

(c) Redemption, &c.:

Redemption	11.78	
Establishment of charges	12.62	
		\$1 42.80

(d) Royalty, averaging 18 cents, being for coal, 24 cents, and slack, 12 cents, making a very moderate average of.....

18.00

Total 1 60.90

The agent of large iron and coal mines gave me \$1.60 as their cost of production for coal used in their furnaces. All these accounts are taken independently, one from the other, and so verify and supplement the statements. Close as these two results of mines run in the general cost price of their output, I have further evidence of the cost of labor being fairly representative in the above 82 cents from three more collieries, the property of one of the largest and most successful iron producers of the United Kingdom, and run under his own management, and whom I will designate by the letter B.

Product of 1885 of—	Tons.	Labor per ton.
Colliery A*	108,957	\$0.8525
Colliery B	142,977	0.7325
Colliery C	84,969	0.87

* Having received my information solely for the purposes of this inquiry, I do not feel at liberty to name the works, and will specify them by letters.

Another authority in mining matters gives me the labor cost of mining a ton of coal in Great Britain as varying according to the nature of the beds from 61 to 85 cents, making a general average of 73 cents, while in North Staffordshire the cost is from 73 to 85 cents, on account of the greater incline of the seams, which, I am informed by the inspector of mines for North Staffordshire, run all the way from 5 to 90 degrees, necessitating also a greater outlay for material and making the labor cost about 79 cents.

D. A coal company in the southern part of this county reports 141,000 tons mined during 1885, at a cost for labor of \$96,731.21, or 69 cents per ton.

E. Another mining account from a mine of great capacity and ease of working gives the following details :

	Cents.	
Mining ..	44	} 63
Yard expenses	10	
Bank wages	04	
Engine drivers, &c.	05	
Materials		21
Redemption and charges		25
Royalty		18
Total		\$1 27

a lower labor cost than in the other mines explained by the greater output through the easier working, as per figures given below. (See out-

put E.) The near approach of all the various statements and estimates here introduced, taken from work accounts, can leave little doubt of their general correctness.

ANNUAL OUTPUT, TOTAL AND PER HEAD EMPLOYED.

The beds of coal in this division of the country vary from 3 to 7½ feet in thickness. A hewer, I am informed, cuts from 3 to 4 tons for his day's work, and the daily production for the whole staff is about 22 hundredweight per individual employed, equal therefore to something over 350 tons per annum. (Coal in North Staffordshire. J. Lowthian Bell. Principles of the Manufacture of Iron and Steel.)

I find this estimate substantiated in the work account of the above-named three collieries of B, their annual output and the number of hands employed :

Mines.	Tons coal raised.	Number of hands employed.	Number of tons per head.
A	108,957	335	325½
B	142,977	375	381½
C	34,969	120	291½
Total	286,903	830	.....
Average .....	.....	.....	345½

The ton is the gross ton ; the cwt. 112 lbs.

The smaller output of mine C is caused by less time worked than in A and B. Mine C is a house-fire coal colliery, and perhaps three-fourths time worked, while A and B are run for the furnaces of the owner, and therefore more full time is worked all the year through.

Output of mine of informant E in 1885.

Mined	tons..	296,556
Mined per head	do...	427
Men employed :		
Under ground		588
Above ground		106
Total		694

It will be remembered that the labor cost of this is given above as 63 cents.

In this district, comprising North Staffordshire, Cheshire, and Shropshire, the two latter, however, being unimportant as mining districts, the number of tons of minerals mined—coal and iron—were 8,330,920, employing 23,277 hands, giving an average of 357.90 tons per head. This is a higher rate than produced in most districts, but as the district offers a much greater consuming power on the spot by means of its large industries outside of iron making—as potteries, for instance, consuming nearly one-half of the whole colliery product of North Staffordshire—the mines are run fuller time and along with the richness of the seams account therefore for the larger average. North and East Lancashire, adjoining this district, on the contrary, only show 313.27 tons per head.

Tons mined (no iron and only 110,533 tons of fire-clay included)	9,999,704
Hands employed	31,919

The district of West Lancashire (the Liverpool district) raised 12,799,200 tons of coal and so few other minerals (57,812 tons) that the whole

may be classed as coal, 12,857,112 tons, employing 41,909 hands, and shows a yield of 307 tons per head. The coal of this district is mostly house-fire coal, and, of course, more subjected to the demand of the seasons. The mining industry, however, was depressed, and showed a much poorer result in this district, compared to the year 1883, when employment was more fully obtained. The output in that year was—

Tons raised	13,355,000 00
Persons employed	41,720 00
Tons per head employed	320 25

It may therefore be fair to take the annual product of one person employed in the coal mines, under and above ground, when working full time, as being expressed by about 325 tons, an estimate which will be found fully borne out by the tables given below in the statement of comparative production in competing countries.

COST OF PRODUCTION AND OUTPUT IN GERMANY (PRUSSIAN COAL MINES.)

I have before me the Report No. 16 of the Minister of Public Works, Mr. Maybach, to the House of Representatives of the Kingdom of Prussia, dated January 16, 1886, on the administration of the mines and iron furnaces owned and worked by the State. The report deals with the mining industry of the Kingdom in general both on private and Government account. The year for which the figures stand is the fiscal year 1884-'85, beginning with the 1st of April and ending March 31. The entire production of all coal mines of the Kingdom was for 1884-'85, in gross tons, 51,867,646, employing on the average 189,248 persons, which is equal to 274 tons per head employed. The total value at the pit's mouth was \$62,015,996.29, or \$1.19 per ton.

The collieries under fiscal administration for 1884-'85 produced of this total 9,566,828 tons, and employed 37,297 persons, an output per head of 256½ tons. The value of this coal was at the pit's mouth \$14,686,842, or \$1.53 per ton, at a labor cost per ton of 86 cents.

Nearly two-thirds of this was mined in the Saarbrück collieries, 6,087,953 tons, giving employment to 25,798 persons. Output per head 282 tons, realizing therefor \$10,839,122, or \$1.77 per ton.

The net cost of the product was \$9,101,447, or \$1.48 per ton, leaving a net profit of \$1,737,675, or 27 cents per ton.

The average earnings of these 25,798 men is given as \$223.24 for the year, or a total of \$5,761,629. Dividing this by the 6,087,953 tons mined, gives a net cost of labor per ton mined at 95 cents as against a minimum cost of 63 cents and a maximum of 87, or average price 79 cents in Staffordshire. The number of shifts of eight hours each, for each person employed, was 296.7 for the year, a higher rate of actual time worked than in the United States and Great Britain on a full average.

The Union of Dortmund, in Westphalia, owners of coal and iron mines and iron and steel works, gives as the result of the working of its coal mines in 1885—

	Tons mined.	Cost of production per ton.	Value realized per ton.
Glückau	189,978	\$1 20	\$1 27
Carl Friedrich	97,982	1 17	1 18

The average earnings of the 7,129 men employed by the Union in its various works are given at \$229.89 per head, or \$6.55 more than the coal miner's earnings in the collieries owned and worked by the Government. *As the number of the men employed in the mines and their earnings are not separated from the total, comprising furnacemen, forgers, and other iron and steel workers, no correct basis for the computation of the labor cost of various products can be obtained.

Over one-half of the coal mined in Prussia is derived from this district, to wit, 28,400,586, out of a total of 51,867,646 tons. The coal is, however, not so pure as English coal, containing 10 per cent. of ash, against half of it in Durham coking coal and 2.7 per cent. of the coal of this district (North Staffordshire).—J. LOWTHIAN BELL.

The total wages paid, exclusive of salaries and overseers' pay, was \$21,035,593 on these 28,400,586 tons, or 74 cents, and, including these, 79 cents. The number of men employed was 100,955, giving an output per head of 281 tons. The number of shifts were 304, at 62 cents average, yielding net \$193 to all employed above and below ground, exclusive of the above-named charges.

The lower cost price in Prussia is due to the absence of royalties. All mines are state property. Iron ore pays no royalty, and coal-beds not worked by the state pay a small percentage on the profits. The total income from this source was, for the year 1884-'85, \$999,434, which, divided among the 51,867,646 tons, less the 9,566,838 mined by the state, or 42,300,808 tons, gives for each ton a fraction less than 2½ cents, a nominal tax only.

EARNINGS OF MINERS.

Colliers, in North Staffordshire, earn, per day, 97 cents to \$1.22; assistants, 85 cents. At the present time not more than 4 to 5 days a week of full work can be taken as the average time, Monday being still the patron saint of the working classes in England, to whom even in busy times conscientious homage is paid.

Colliery C (the property of informant B), mining 34,969 tons and employing 120 men during 1885, paid out \$28,843.50, making an average for all employed under and above ground of \$215.36. This is below the general average. The mine being a house-coal mine, has been worked about two-thirds of the time only.

Colliery D, mining 13,058 tons of coal and 16,743 tons of iron ore, employed, 153 men, of which 19 were engaged in brick-making, and paid \$40,619.80, or \$265.47 per head employed.

The average earnings of all men employed by the firm, engaged in coal and iron mining, furnace and forge work, was \$280.31.

The total of wages paid to 2,871 persons, comprising men and boys employed in all the works in 1885, was \$504,902.33, or, as stated, \$280.31 per head.

THE OUTPUT OF MINES IN ENGLAND IN 1885, AS REFLECTING GENERAL TRADE ACTIVITY.

The report of the inspector of mines for 1885, has just been published, giving as the output for that year, 159,531,418 tons, against 160,757,799 tons for 1884, or a loss of 1,226,381 tons. This difference is covered partially by a decrease in the production of pig-iron, amounting to 278,309 tons. The exports of coal were 23,767,275 tons against 23,350,230 tons in 1884, or +417,045 tons, so that these two items would about

balance each other. This would indicate a decrease of something over 1,000,000 tons in other branches than pig-iron making against the preceding year for all other purposes, in a home consumption of 136,000,000 tons; no very great item, especially when held up to the unmistakable signs of depression in the coal trade. This, however, is undoubtedly largely due to the many new mines opened whenever there is any great amount of activity abroad. This is best illustrated by the increase in output over the very active year 1880, and in the number of miners which were 484,933 in 1880, and 520,632 in 1885. The output per head, however, is 5 tons greater now than in 1880, even.

OUTPUT AND LABOR COST IN COAL MINING IN THE UNITED STATES.

The figures of the United States census of 1880, of a year in which labor was well employed and receiving wages fully as high, it may be presumed, as in the years of depression from which the data for these two countries are taken, may serve here for comparison.

Cost of production of anthracite coal.

[28,621,371 tons (of 2,000 pounds) mined. Miners employed, 70,748.]

Items.	Per ton.	To bring up to gross ton, English and German ton weight.
Value (\$42,189,740)	\$1 47	\$1. 63
Wages paid (\$22,693,407)	0 79	0. 877
Materials, value (\$6,732,592)	0 24	0. 266

Leaving 44 cents for profit and charges.

The output of 28,621,371 tons, miners employed 70,748, gives per head, employed, an average of 404.56 tons, or in gross tons, 361.

Cost of production of bituminous coal.

[41,860,055 tons (of 2,000 pounds) mined. Miners employed, 100,116.]

Items.	Per ton.	Gross ton.
Total value (\$52,427,865)	\$1 25½	\$1 39
Wages paid (\$32,601,460)	77½	86½
Materials (\$4,860,493)	11½	12½

Leaving 36 cents for profit and charges.

Output per head employed, 418.10 tons, or 377 gross tons.

While the average labor cost (taking the higher rates of 1880 to give all benefit of a doubt to the ruling argument of a higher labor cost in America) is on an average about 7 cents more per gross ton (both anthracite and bituminous) than in the soft coal mines of Staffordshire, and about 8 cents below the cost of mining in the Prussian fiscal works at Saarbrücken, the cost of materials as given by my informant, A, is 40 per cent. higher in Staffordshire than in the anthracite beds of the United States. In most of our bituminous mining fields the cost is, however, considerably less, as will be seen from this abstract from the census;

Cost of production of bituminous coal in Pennsylvania, Ohio, and Maryland.

Coal-fields.	Tons raised.	Total value.	Value per ton (2,000 pounds).		Total wages.	Wages per ton.	Wages per gross ton.	Materials.		Profit and charges.	
			Value per ton	Value per gross ton.				Ton.	Gross ton.	Ton.	Gross ton.
Western Penn- sylvania.....	12,852,664	\$12,287,907	\$0 96	\$1 02½	\$7,803,572	\$0 61	\$0 67½	\$0 10	\$0 11	\$0 25	\$0 27½
Clearfield re- gion	3,162,193	3,836,335	1 21	1 34½	1,836,444	58	64½	10	11	53	58½
Ohio and West Virginia.....	7,725,423	9,601,835	1 24	1 36½	6,398,863	83	98	15	16½	26	29
Maryland.....	2,227,844	2,584,455	1 16	1 28½	1,370,079	61	67½	9	10	46	51

Bringing this down to more recent dates, and using the statements produced in the report of the bureau of industrial statistics for the State of Pennsylvania, for the western part of the State, in 1884, we have the following data for comparison :

Total tons mined, men employed, and yearly output per man employed, and average working time in the western district of Pennsylvania in 1884.

District.	Tons mined.	Men employed.	Average working days.	Tons mined, per head.	Gross tons mined, per head.
First bituminous district.....	4,349,165	12,328	175	353	*315
Second bituminous district.....	4,494,600	8,560	150 to 320	525	468
Third bituminous district.....	2,270,526	5,003	(†)	454	406
Fourth bituminous district.....	2,390,335	4,118	225	582	520
Fifth bituminous district.....	2,143,444	2,930	251	731	653
Sixth bituminous district.....	4,905,020	6,125	213	800	714
Total.....	20,553,190	39,064	...	525	469

* Many of the mines have a very small output, while many of the large ones show up to and over 1,000 tons per head.

† "The mines on an average have only been in operation little better than seven months during the year, which is due to the depression in the coal trade. Thomas K. Adams, inspector."

‡ "Average price paid for mining a ton 38½ cents; 42½ cents per gross ton. John M. Watt, in-
spector."

COMPARATIVE STATEMENT OF COST OF LABOR PER TON, OF EARNINGS, AND OF OUTPUT PER HEAD EMPLOYED IN COAL MINING IN THE UNITED STATES, GREAT BRITAIN, AND THE KINGDOM OF PRUSSIA.

The statistics of Great Britain do not give an account of the wages paid to operatives, nor of the cost of production. All information on this very important part in establishing comparative labor cost has to be gathered from private sources. Replete as the British statistics are in other branches (product and hands employed), it is to be regretted that parts of so important a nature as general wage statistics have to be left to estimates. A fair average for miners' wages at the present time of depression in the coal trade may be taken for the whole year, averaging actual working time, at the rate of \$4.86 per week, or \$253 annum. The same difficulty of getting at the true general results we meet in the figures giving the general output in coal mining, the persons employed not being separable, in all instances, for the different minerals taken out of the mines.

Taking the official statements of such mining where only few other products are mined, and of which I give an abstract below, then the

output of individual mines is as stated to be, 322 tons, and we arrive at the following comparative summary:

Country.	Gross tons mined per head.	Cost of labor per ton.	Annual wages earned per head.
United States, 1880 (bituminous).....	377	\$0 68½	\$326 00
Great Britain, 1884.....	322	79	253 00
Fiscal administration:			
Prussia (Saarbruck collieries)	256½	95	225 12
Dortmund collieries.....	281	81	195 60

The output of the principal coal fields, mining little of other minerals, so that the whole product can be classified, so far as differences in mining products are concerned, under the heading of coal, was as follows (all other mining products being under 5 per cent. of the total):

Output of the principal coal mining districts, of mines subject to the coal mines act in Great Britain during the year 1885.

District.	Number of hands employed.	Coal.	Fire-clay.	Iron.	Shale.	Total.	Tons per head employed.
		<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	
Cumberland, Northumberland, and North Durham ..	52,308	16,841,800	362,200	800	300	17,208,000	329
South Durham ..	56,575	20,939,500	251,000	.....	.....	21,190,000	374
North and East Lancashire ..	31,919	9,889,271	110,500	.....	.....	9,999,800	313
West Lancashire ..	41,909	12,799,200	42,100	4,400	11,200	12,857,200	307
Yorkshire ..	64,046	19,220,100	215,400	167,800	56,600	19,660,000	307
Derbyshire ..	53,278	16,080,600	77,600	36,000	8,700	16,198,000	304
South Staffordshire* ..	23,816	9,688,000	205,300	116,900	2,800	10,013,200	420
Monmouth ..	34,945	9,531,400	99,900	27,200	44,500	9,703,000	277
South Wales ..	60,779	18,226,700	134,300	52,500	3,800	18,417,500	303
Total ..	419,578	133,216,571	1,498,300	405,600	123,000	135,246,700	† 322
Total for United Kingdom ..	520,376	160,757,700	2,053,700	10,412,400	1,648,600	174,872,700	.....
Districts named representing per cent. of whole for Kingdom ..	80	83	73	4	7	77	.....

* I do not include North Staffordshire in the abstract, as 25 per cent. of the total output is iron ore, and, consequently, would disturb the homogeneity of the tables.

† Average.

It must always be remembered, however, that two fifths of American coal production is the hard anthracite coal, while nearly all of the coal produced in Great Britain is of a soft bituminous nature. Comparing the product of the anthracite coal mines of South Wales with that of the anthracite coal mines of America, we have:

Country.	Gross-tons.	Hands employed.	Mined per head.
America ..	25,555,800	70,748	361
South Wales ..	18,417,541	60,779	303

which may perhaps be taken as representing individual activity of both nations. Prussia's small production per capita explains the higher cost of labor if measured by the piece, coupled with smaller earnings. Under all circumstances it is evident that America's higher earnings are not

due to higher labor cost, but to greater quantities produced than by its most efficient competitor, Great Britain. American labor in this, as in so many other industries, simply earns the results of its greater productiveness in the higher wages it receives.

The actual causes of this great comparative efficiency to be definitely settled would necessitate a personal visit to the coal-fields of the different nations. It is a difficult matter to obtain trustworthy information except through actual contact with those capable of imparting it—the owners and occupiers. For the purpose of establishing the price-making factors it is, however, of minor importance, whether the facts are explained by the more rigid enforcement of mining regulations as, in Prussia, by the greater depth and greater geologic facilities as offered in many of the English collieries, and more so yet in America, or by the longer hours worked in the latter country, against which, however, the fewer weeks worked in the year in our own coal-fields may be fairly held to be more than a counterpoise. The facts produced in the actual prices for labor paid per ton and the number of tons mined per head could not be altered or challenged by any subsequent amplification of the causes which lead to these results. The principal object being to obtain the respective labor cost in competing countries, the limits of this report are fully reached by the figures set forth.

LABOR COST AND GENERAL COST OF PRODUCTION OF IRON ORE.

The labor cost in mining one ton of iron ore, stated in the above abstract, marked A, of the product of the week ending February 16, 1886, as being \$1.70, is divided as follows:

(a) Mining	\$1 17	
Repairs	08	
Engine drivers and bank wages	05	
Pumping water	07	
Yard, driving	08	
Office, &c., superintending*	25	
		\$1 70
(b) Materials, stones, and ropes	.0460	
Timber and pit wood	.0460	
Rails and iron-work	.0450	
Bricks and mortar	.01	
Castings	.0130	
Fuel for engine and hauling	.06	
		22
(c) Redemption of capital		25
(d) Royalty		23
Total		2 45

The sales price and the average price at which ore is taken by the mine owners into their furnace account is about \$2.19 a ton at this time. The difference where it does occur through smaller mining facilities in this time of depression must be supplied by capital account, redemption charges, &c. One dollar and forty-six cents per ton may be put down as fairly expressing the average labor cost of iron mining, varying, however, according to the size, depth of the mine, hardness of stone, greater or smaller difficulties met with in mining and mode of deposit in thick seams or disconnected bands. Cost as well as output differs from

*In other accounts this is taken under general expense and not strictly under labor account. I have produced it here in conformity with the results given to me for week ending February 16, on page 99.

year to year in three mines worked by A, B, and C. Coal mines of B, quoted above, and these three mines, differ in cost in the same year under the same management, as will be seen by the following:

Product of iron mines and cost of labor of mining in year by B's mines.

Mines.	1882.		1883.		1884.		1885.*	
	Tons.	Cost.	Tons.	Cost.	Tons.	Cost.	Tons.	Cost.
A.....	74,975	\$1 15	41,076	\$1 25	68,667	\$1 10	43,271	\$1 09
B.....	31,909	2 06	19,838	2 34	26,025	2 04	16,743	1 87
C.....					75,072	1 58	73,898	1 42½
Total.....	86,884	1 48½	60,914	1 00½	169,764	1 53	133,912	1 46

* Labor differences all due to different geological construction of the strata.

It will be noticed from this, however, that, taking all available data into consideration, \$1.46 is about a fair average of the labor expense in a ton of iron-stone.

The total annual output and tons mined per head for these mines for all employed in 1885, stands:

Mines.	Tons mined.	Coal.	Hands employed.	Tons per head.
A.....	43,271	Tons. 8,645	133	325
B.....	116,743	13,038	94	178
C.....	73,898	21,813	356	208
Total.....	133,912		583	
Average.....				220

* Employed in all 159 men, but allowing 325 tons as the average in coal mining would require 26 for coal mining, leaving 133 men for ironstone.

† Employed in all 153 men, of whom 19 were engaged in brick making, leaving 134 hands; and allowing at the above rate for coal mining 40 men, leaves for iron mining 94 men.

‡ Employing 423 men in all. The same computation takes off 67 men for coal mining, leaving 356 men for iron mining.

The smaller output of the mines B and C explains the higher labor cost and shows sufficiently that the earnings of the miners are not necessarily higher where the labor cost per ton mined is the highest, or *vice versa*, as in mine A, that the lower cost of production causes smaller earnings.

From another informant, E, I have the labor cost of mining as 97¹/₁₀ cents, \$1.2350, and \$1.4206 per ton for the three mines worked by him. Of these the following tons per head in 1885 were mined:

Mines.	Tons mined.	Hands employed.	Tons per head.
No. 1.....	56,699	178	316
No. 2.....	29,504	120	246
No. 3.....	40,703	221	185
Total.....	126,906	519	
Average.....			249

COST OF PRODUCTION AND OUTPUT IN GERMANY. RESPECTIVELY
PRUSSIAN IRON MINES IN 1884-'85.

The entire output of all iron mines of the Kingdom was, for 1884-'85, in gross tons, 4,186,075, employing on an average 29,816 persons, which is equal to 140.39 tons per head employed. The total value at the pit's mouth was \$6,133,747, or \$1.46 per ton.

The iron mines, under fiscal administration, produced of this total only 117,477 tons, and employed 970 men, an output of only 121.11 tons. All of this came from the mining district of Bonn. The value realized was \$229,425, or \$1.90 per ton, a result not netting the labor cost, if the average earnings of \$223 of coal miners were to be taken also for those employed in the iron mines. Of this, however, I am not certain, as the report does not make mention of wages paid in the output of iron mines.

The smallness of the output is worthy of note. This, as I am told by the mining inspector of this district (North Staffordshire), who has studied the question on the spot, a statement which is corroborated by J. Lowthian Bell, is partially due to a great quantity of sterile matter contained therein and thrown back by the miner, and consequently not counted. The Luxembourg ores, easier mined, added to the general output of the Prussian mines (as given in the statistical year-book for the German Empire), bring up the general average of the output of all German mines of iron ore to about 210 tons per head employed. The Luxembourg ores resemble in geological position those of the Cleveland district, and being easier mined, there is a larger yield. The average yield is about 35 per cent. of iron. Cleveland iron-stone is rated at about 38 to 40 per cent. by the best authorities.

The Union of Dortmund mined 59,710 tons, mostly used in their own furnaces, and which were charged at \$108,888, or \$1.78 per ton. The ore found in the neighborhood of Dortmund is rated as containing 40 to 48 per cent. of iron.

OUTPUT AND LABOR COST IN IRON MINING IN THE UNITED STATES
IN 1880 (UNITED STATES CENSUS).

The product per head and the cost per ton are—

Tons mined	7,064,829
Wages paid	\$9,538,117 00
Wages paid per ton	1 35
Wages paid per gross ton	1 50
Materials	3,211,558 00
Materials per ton	\$0 45½
Materials per gross ton	50
Men employed	31,668 00
Earnings per annum	\$301 19

or about the same as the mining expenses for labor and materials run in this (Staffordshire) district. It may be safe, however, to say that the mining expenses in most of the New Jersey and Pennsylvania mines in the last year, at least, were rather below this figure of 1880. I state this on good authority from New Jersey, and for Pennsylvania from the report of the chief of the bureau of industrial statistics of Pennsylvania of 1885, for the year 1884, about 110 mines reporting—

Tons mined	829,011
Wages paid	\$623,376 00
Wages paid per ton	75
Wages paid per gross ton	83½
Men employed	2,428 00
Tons per head	345 97
Annual earnings per head	\$257 00

COMPARATIVE IRON PRODUCTION.

The cost, divided over the different mines by counties reporting to the labor bureau, was as follows (omitting all counties reporting less than 10,000 tons):

County.	Average number days worked.	Men em- ployed.	Tons mined.	Wages paid.	Labor cost per ton.
Berks	209	130	36,998	\$45,082	\$1 22
Blair	258	247	60,390	62,313	1 03
Centre	167	135	33,116	23,456	70
Chester	300	35	11,000	20,181	1 83
Clarion	280	100	13,412	21,616	1 61
Cumberland	160	358	60,716	71,769	1 18
Huntington and Bedford	265	213	44,421	70,000	1 57
Lancaster	280	80	33,000	18,500	56
Lebanon	300	165	392,941	66,654	17
Lehigh	183	331	50,101	63,389	1 26
Northampton	229	63	11,061	11,520	1 05
Perry	237	98	25,978	45,929	1 76
Snyder	202	117	13,860	21,500	1 82
Total		2,072	787,000	541,709	
Average					69

The smallest mines left out as unprofitable in a working sense reduces the average cost from 75 to 69 cents. But Lebanon County's great product at comparatively small cost, removed from this account as an offset against English (Cleveland district) yield of iron mines, would leave the general average expense at \$1.20. This compares very favorably with the cost of production in Staffordshire, as will appear from a comparison with the various mining accounts given above, where the cost varies from 97 cents to \$2.31 per ton.

COMPARATIVE SUMMARY OF OUTPUT PER HEAD IN THE UNITED STATES, GREAT BRITAIN, AND PRUSSIA.

A comparison of ore-mining results of different countries, measured by districts, would hardly convey the full meaning when these results vary so widely in any one country, dependent as they are on the nature and depth of the mine, the hardness of the rock, and the incline and width of the seam. This difficulty, however, becomes obviated in a measure when the yield of a whole country is taken. The same geologic variations may be presumed to exist in other countries, and a comparison of the total output of nations equally provided with rich and varying deposits may give the fairest possible abstract of respective national working capacity. Where, as in the Cleveland district, the deposits are all on the surface the yield is 6,052,600 tons, employing 7,050 miners, and yielding 858 tons per capita, others, as in this district, only produce 175 tons per head. On the other hand, we have deposits, in the United States, as in Lebanon County, Pennsylvania, where, according to the report, the Bureau of Industrial Statistics of Pennsylvania for 1884, page 93, the yield is far exceeding this, to wit, 392,941 tons, mined by 165 hands employed, or 2,381 tons per head. Unfortunately for the purposes of this inquiry the miners working iron mines are not separated from the total employed in mines, as in the German and American official reports. It is, therefore, not possible to compute the working capacity of laborers in iron mining and bring it to the same head as in coal mining. Besides, from the vast differences caused by the nature of the rock and general situation, a statement of this sort could not convey the meaning which it does so fully in coal mining.

COKING.

Little coke is used in furnace work in this district. Not quite 10 per cent. Two thousand eight hundred pounds of coal for a ton of coke. The cost of coking is 20 cents, with 28 cents additional to cover all extra expenses.

Price of coke.

One and one-third tons of coal, at \$1.64	\$2 27
Coking	20
Extra expenses	28
Total	2 75

The present price of coke at the coke ovens at Durham is quoted at \$2.43, delivered at Middleborough (Cleveland district) at \$3.04.

PRICE OF COKE IN PRUSSIA.

The price realized by the Prussian fiscal administration for the year 1884-'85 was \$2.65. The price of coke put on board cars at Connells-ville is from \$1.10 to \$1.20, or per gross ton \$1.20 to \$1.33 (as per report of the Iron and Steel Association of 1885).

COST OF MAKING PIG-IRON.

My informant A offers the following data for the computation of cost of making pig-iron :

Materials and labor in the production of 837 tons of pig-iron produced in week ending March 2, 1886.

Materials, &c.	Per ton.	Total.
Coal, 1,449 tons	\$1 64	\$2, 379
Coke, 128 tons	2 76	347
Slack, 176 tons	97	171
Limestone, 310 tons	1 22	377
Iron ore, 1,594 tons	2 43	3, 878
Labor		726
		7, 878
Renewals, repairs, and all other incidentals, 10 per cent.		787
837 tons of pig-iron		8, 665

Or \$10.35 per ton, in which furnace labor stands as 86 cents.

My informant B states the output of two furnaces, situated on coal-beds A and B, to be—

Furnace,	Tons pig, 1886.	Labor per ton.
A	24, 624	\$0 91½
B	24, 302	1 16
Total	48, 926	
Average		1 03½

Taking the account for the last four years, we arrive at the following facts:

Furnace.	1882.		1883.		1884.		1885.	
	Tons.	Labor.	Tons.	Labor.	Tons.	Labor.	Tons.	Labor.
A.....	40,564	\$0 92½	31,877	\$0 97	30,761	\$0 92½	24,624	\$0 91½
B.....	41,730	91½	33,459	1 05½	32,896	1 06½	24,302	1 16
	82,294	92	65,336	1 01½	63,656	1 00	48,926	1 03½

Ninety-seven cents may be taken as a fair average for labor in pig-iron-making, though slightly above the labor cost of A. The higher cost in furnace work, B of B, is due to the fact that the furnaces were working badly, and for nearly three months of 1885 "very badly." The larger output results in smaller cost.

The figures from B for pig-iron are:

The cost in furnace work—A and B.

2 tons of ore, at \$2.19.....	\$4 38
2 tons of coal, at \$1.58.....	3 16
8½ cwt. of limestone.....	49
Labor.....	97
Renewals and repairs.....	40
Interest, &c.....	25
	9 65

Both A and B produce their own coal and ore, and come to almost exactly the same cost. The difference of 70 cents in the computation of A's prices is due to his charging in ore and pig-iron about 25 cents more in general expense charges, which B says it fully costs, but is hard to get out of iron at this present time, when Cleveland is selling at \$7.78, which all say here cannot be produced at much less than \$8.75 and pay expenses. Others, however, hold that at Middleborough iron can be made at \$7.78 even at a small profit, as all the scientific inventions of the last fifteen years have been brought to bear on iron-making in the Cleveland district to a much greater extent than in any other iron district of the United Kingdom, the economizing of fuel being not the least of the advantages derived from the improved furnaces of nearly twice the capacity of those in the older districts. The Cleveland district, however, has advantages for iron-making which are nowhere else to be found in the Kingdom, and consists, as I am informed, mainly in the ore being all surface ore and easily mined. Besides this, the furnaces of later construction are of much greater capacity, and the cost is therefore below other iron-making districts. The iron is of a cheaper kind and is used for common purposes. These low prices can only be explained by the great trade depression in iron, which is best exemplified by the fact that nearly 300,000 tons were produced less in 1885 than in 1884, and yet on the 1st of January, 1886, the stocks on hand were 542,000 tons larger than at the same date of the preceding year, being 2,351,000 tons on January 1, 1886, against 1,809,000 tons held on January 1, 1885.

The steadiness in which the labor price maintains itself under all these depressing influences, and the steadiness of employment which is implied thereby, may be considered a hopeful sign, showing that consumption is going on all the time.

COMPARISON OF LABOR COST IN THE UNITED STATES AND STAFFORDSHIRE IN ONE TON OF PIG-IRON.

The labor cost of pig-iron in the United States in modern furnaces is quoted to me by large producers of iron at \$1.40 per ton. The special agent of the census, Joseph D. Weeks, gives the labor cost at Pittsburgh for 1879-'80 at \$1.25. Accepting, however, the higher figure, so as to give all benefits of a doubt which may be claimed on our side to our labor cost, then the comparative positions of *direct labor expense* contained in a ton of pig-iron are as follows:

Cost of labor in the coal and iron consumed in one ton of pig-iron.

Items.	Staffordshire.	United States.*
Coal (2 tons)	\$1 58	\$1 72
Iron ore (2 tons)	12 88	3 00
Limestone	28	83
Labor average	90	1 40
	5 64	6 45

* This is higher than the figures given by Mr. Weeks, who names \$5.18 as the labor cost in the items mentioned. But having reference to the gross ton this brings \$5.18 to \$5.75.
† Calcined.

ROYALTIES.

The royalties in mining are usually assessed on the surface space—so much per foot an acre, besides a surface rent. The average royalty rent per acre at the present time for 1 foot thick is about \$175 for coal mines. Twelve hundred tons per acre may be taken as a fair yield; but of course this is not always certain. The average for coal at 18 cents per ton and for iron ore at from 25 to 29 cents brings the expense for this item in pig-iron to about 85 to 93 cents, as given to me by various parties in this district.

J. Lowthian Bell gives the royalties at 91 cents for Cleveland pig-iron, and he states the royalties in a ton of pig-iron to amount—

For North Staffordshire, to	\$0 97
For Cleveland, to	91
For Derbyshire, Northamptonshire, and South Wales, to	1 03
For Scotland, Cumberland, and Lancashire, to	1 58

Our charges may be taken to be nearer the latter than the former figure.

The absence of this charge gives Prussia a great advantage. This is usually lost sight of in discussions on competitive relations of the two nations, as well as in our country, where we are wont to charge excessive cost of production to labor when it can be demonstrated that the labor cost is not higher than in other countries. Royalties and mining rents and charges are no labor expenses, nor are excessive transportation charges to badly situated and antiquated furnaces.

TRANSPORTATION CHARGES.

Much complaint is made by the ironmaster as to overcharges in freightage compared to what is paid by his continental competitor, the same as the earthenware manufacturer (see my report on earthenware in April number of Consular Reports). This situation is largely due to the fact that the canals have gone mostly into the possession of railway

companies, and is fitly described by Mr. E. Fisher Smith, the president of the Mining Association of Great Britain, in his statement to the Royal Commission on trade depression. He says:

The acquisition of canals by railway companies has also been a serious disadvantage to the coal, iron, and other heavy trades, by destroying the only chance of competition of carriage in those heavy goods or productions. The canals so acquired have not been developed, and there are instances of canals belonging to railway companies being practically closed for through traffic.

The cost of labor has not fallen in proportion to the prices of fuel; this, however, is a question which can only be arranged between employers and employed.

In France and Belgium goods are conveyed by canal at from one-eighth to one-fourth of a penny per ton per mile, including every charge, whereas in South Staffordshire the Birmingham Canal Company, which is controlled by the London and North-western Railway Company, charge $1\frac{1}{4}$ pence per ton per mile for toll alone.

I subjoin a comparative statement of English and foreign railway rates on iron ores, pig-iron, and manufactured iron.

Comparison of English and foreign railway rates.

[Compiled from statistics presented to the British Iron Trade Association by Mr. J. S. Jeans, the secretary, dated February 21, 1885.]

IRON ORES.

	Average mileage.	Average rate per ton per mile.
<i>English.</i>		
North Staffordshire	79	1.46
Cleveland	20	2.00
West Cumberland	104	3.80
Northampton	72	1.10
Average	45	2.08
<i>Foreign.</i>		
France:		
Special rates	87	1.06
Ordinary rates	214	1.14
Nord Railway rates	78	1.60
Germany	141	0.84
Belgium	118	0.80
Austria (three railways)	231	1.08
Sweden	100	1.22
Average	138 $\frac{1}{2}$	1.10

MANUFACTURED IRON.

<i>English rates from works to ports.</i>		
South Wales	151	2.06
West Cumberland	105	2.10
Wigan	103	2.32
South Staffordshire	157	2.74
Cleveland	132	1.60
North Staffordshire	144	2.02
Lancashire	140	2.28
Average	133	2.16
<i>English rates inland from works.</i>		
South Wales	130	2.30
West Cumberland	120	2.26
Lancashire	71	3.26
Cleveland	100	2.52
North Staffordshire	45	3.90
Average	98	2.98
<i>Foreign finished iron and steel.</i>		
France:		
Nord Railway	59	2.10
Works to ports	267	1.18
Works to inland markets	267	1.32

Comparison of English and foreign railway rates—Continued.

MANUFACTURED IRON—Continued.

	Average mileage.	Average rate per ton per mile.
<i>Foreign finished iron and steel—Continued.</i>		
Germany:		<i>Cents.</i>
Works to inland markets	296	1.34
Works to ports	215½	1.06
Belgium:		
Home consumption	59	2.23
Exportation	55	1.73
Austria	231	1.90
Sweden	100	1.56
Average	172	1.56

FIG-IRON.

<i>English rates from works to ports.</i>		
Lancashire	146	1.74
North Staffordshire	144	1.74
South Wales	215	1.46
Lancashire	126	1.94
West Cumberland	127	1.56
Northampton	94	1.96
Cleveland	71	1.54
West Coast to Hull	162	1.32
Average	136	1.66
<i>Foreign.</i>		
France:		
Works to ports	118	1.18
Inland markets	113	1.20
Germany	200	1.00
Austria (three railways)	231	1.30
Sweden	100	1.50
Average	152½	1.24
<i>English inland rates from works.</i>		
South Wales	177	1.78
Cleveland	86	1.78
West Cumberland	142	1.54
Northamptonshire	74	2.04
Staffordshire	45	2.96
Barrow	55	1.72
Lancashire to Sheffield	153	1.46
Average	105	1.92

The average English rates are higher in the following cases, the average distance being considerably more in foreign countries than in England:

	Higher than—	Percent.
Iron ore	France	58
Do.	Germany	87
Do.	Luxemburg	87
Do.	General average of foreign countries	82
Pig-iron:		
Works to ports	France	40
Do.	Germany	43
Works to inland markets	do	102
Do.	France	68
Finished iron and steel works to ports	do	79
Do.	Germany	96
Do.	Belgium	28
Finished iron to inland markets	France	120
Do.	Germany	115
Do.	Belgium	30

COTTAGE RENTS.

Cottages owned by mine-owners are let to miners at a rental of 61 cents a week.

The truck system, this invidious parasite of the workingman's wages, is absolutely abolished and does not exist in any form. Pay-day is on Saturday of every week. All wages are paid in cash. Though the weekly wages may seem smaller than in mining districts in the United States, yet they, along with the work, are more evenly divided over the year. Occupation being fuller, play weeks and blue Mondays may assist in bringing this about. An undoubtedly preferable condition to work being crowded into few months, with alternating idleness and starvation sandwiched in between.

J. SCHOENHOF,
Consul.

UNITED STATES CONSULATE,
Tunstall, May 3, 1886.

ENGLISH CORPORATIONS DOING BUSINESS IN THE UNITED STATES.

REPORT BY CONSUL WOOD, OF DUNDEE.

The following report and statistics relate to the several companies doing business in the United States that have their chief offices at Dundee and in the north and east of Scotland, and will, it is believed, have some interest at the present time. In addition to these, a list is also given of all companies now existing in the United Kingdom that have their field of operations in the United States, so far as such a list is obtainable, with such particulars regarding each as have been accessible. The list includes general investment companies, land and mortgage companies, and mining and cattle and land companies. The information has been brought down to the close of the year 1885, and has been obtained from the records and published statements of the several companies and from other sources that are believed to be competent and trustworthy.

All the companies, whether established in Scotland or elsewhere in the United Kingdom, are created under the "limited liability" act.

NATURE OF COMPANIES.

The companies that have their headquarters in Dundee are of two distinct classes. They are either (1) trust, investment, mortgage, and land companies, or (2) cattle and land companies. These titles suggest generally the kind of business in which they are engaged. The former are concerned with investments in land and railway and municipal securities, the latter with investments in cattle ranches and the raising and selling of cattle. The mortgage and investment business extends into every State of the Union, but the greater part is done in the Western and Northwestern States, while investments in bonds of railways or cities are made as they are found suitable, though as yet no considerable business has been done in the Southern States. In many of the States there are general and local agencies. On mortgages the money is lent in comparatively small sums and in very great part to farmers. In some few instances large sums have been invested in railways in the

extreme west and in some other enterprises, and these appear to have been the least successful of their ventures.

The investment and mortgage companies that have their chief offices at Dundee, and that operate solely on local capital, are the following: First Scottish American Trust Company, Second Scottish American Trust Company, Third Scottish American Trust Company, East of Scotland Investment Company, Dundee Investment Company, and Dundee Mortgage and Trust Investment Company.

Of the cattle and land companies the following belong also wholly to Dundee: Hansford Land and Cattle Company; Matador Land and Cattle Company, and Texas Land and Cattle Company.

There are no mining companies whose headquarters are at Dundee.

All these companies, whether trust, investment, or cattle companies, are of quite recent origin. The oldest is the First Scottish American Trust Company, which was formed in 1879, and was followed in the same year by the second and third of the same name and under the same management. Its first issue of shares of £300,000 was followed by a second of £400,000, and that by a third of £400,000. A company under the title of the Oregon and Washington Company was also formed, but was merged into the Dundee Mortgage and Trust Investment Company, with a capital of £700,000.

INVESTMENTS AND DIVIDENDS.

It is to be said that in the amount of investments in these companies Dundee is exceptional when compared with Glasgow and Edinburgh, which exceed it greatly in population and wealth. It seems also to have turned its attention earlier to investments in the United States. The reason is perhaps not far to seek. For many years, and largely during and since the late American war, capital had been rapidly increased by the peculiarly successful industries of the town, chiefly of jute fabrics, and it eagerly sought remunerative investment. The close commercial connections with the United States stimulated inquiry and offered opportunity. The shrewder and more enterprising merchants had already availed themselves of the chances offered in American railway securities and in real estate, and with much success. This suggested a combination of capital, and led the way to the formation of the first Scottish-American Company, and of the second and third, the profits of all of which have been remarkable from the start. The average dividends are still as high as 8 per cent. annually on a capital of £1,100,000. The Dundee Mortgage and Trust Investment Company has had an equal and even larger success, and is paying an annual dividend of 10 per cent., besides accumulating a reserve fund of nearly £1 per share.

The paid up capital of these investment and mortgage companies now amounts to £1,500,000, and if the debentures are included, to £2,000,000. If to these be added other companies in which Dundee investments are concerned, the total subscribed capital is about £11,500,000, and the paid up capital about £3,500,000. Besides this, the loans on debentures and deposits exceed £6,500,000. The statistics show, apart from very large private investments, that Dundee has about £2,000,000 in their local companies, and about £1,000,000 in companies established at Glasgow, Edinburgh, and elsewhere in the United Kingdom.

Some of the investment and mortgage companies confine their business almost wholly to safe interest-bearing railway and municipal

securities, and in general these investments have been made with great foresight and prudence. The Dundee Investment Company is in a measure an exception, in consequence of a purchase of a large amount of real estate which has proved for some time unproductive, but is now in process of sale at an advantage. For several years no dividend has been declared, but for the year 1885 a dividend of 5 per cent. has been paid. Others of the companies combine the dealing in railway and other securities with lending their money on first mortgages on land, and even make the latter their chief business. The purchase of real estate as a speculation is not favored, and is prohibited to some of the companies, but it happens from time to time that land is left on their hands by foreclosure. The dividends attest the carefulness with which the investments have been made and their business done. They have, however, felt the gradual decline in the rate of interest that has taken place not only in the United States but elsewhere over the world, and while very satisfactory dividends may still be earned and paid the period of the former high interest is no doubt past. The future of these companies will also be affected, as is already felt, by the rapid growth of capital in the United States, and the consequent competition for mortgage and other investments. These conditions are already operative; and while these companies followed quickly one after another some years ago, there seems now no disposition in Dundee to form new companies having the United States as the field of business.

It may be said that apart from the companies in Dundee that operate in the United States besides cattle companies, there are others of the same general character that operate in Canada and other British colonies.

The reports of these trust and investment companies for the year 1885, show closely they are connected with the condition of railway securities and of the more general business of the United States. The late depression in railways had been seriously felt, but the securities held by them had so advanced in 1885 that all losses had been more than made up. They have, however, been compelled to notice the depression in land and agricultural products, and that the prices of these have not shared to any satisfactory extent in the recovery in other directions. The result has been that the companies have found it necessary to foreclose in many cases and to take the title to the property. And to such an extent has this happened that they have felt themselves obliged to write down certain amounts so as to cover any possible losses.

CORPORATIONS IN OTHER CITIES.

Although the trade relations with the United States of Glasgow, Manchester, and Liverpool far exceed those of Dundee in extent, and although the capital at Edinburgh seeking investment is known to be large in amount, yet these cities seem not to have turned to the United States as a field for investment so soon as Dundee. They have, however, of late, and particularly Edinburgh, developed much activity in this direction, and now have a number of such companies. It is asserted, and no doubt with much truth, that a part of the capital in some of them has been furnished from Dundee. The following list of the companies established in Edinburgh and Glasgow may be given here, viz:

(1) *Edinburgh companies*.—American Mortgage Company of Scotland; Arizona Copper Company; Arizona Trust and Mortgage Company; Edinburgh American Land Mortgage Company; Florida Mortgage and Investment Company; Oregon Mortgage Company; Scottish American

Investment Company; Scottish American Land Company; Scottish American Mortgage Company; United States Mortgage Company of Scotland; Scottish California Orange and Vineyard Company.

(2) *Glasgow companies*.—American Land and Colonization Company; Colonial and United States Mortgage Company; Scottish Mortgage and Land Investment Company.

STATISTICS OF CAPITAL, ETC.

As a summary of many particulars of some of the largest investment, trust, and mortgage companies, whose business is done in the United States, the following table (No. 1) is given. Besides the capital of each company, whether subscribed, paid up, or otherwise obtained, the table sets forth the revenue, both gross and net, the working expenses, the interest payable, with the proportion of net revenue to interest payable, and lastly the reserve of each company. The figures here given are made up for the year 1885. The footings show the following statement:

Total working capital.....	£5, 179, 740
Reserve.....	564, 025
Gross revenue.....	388, 178
Working expenses.....	49, 932
Net revenue.....	338, 246
Interest payable.....	184, 222
Average proportion of net revenue to interest payable.....	1. 82

TABLE 1.

Name of company.	Gross revenue.	Working ex- penses.	Net revenue.	Interest pay- able.	Proportion of revenue to interest.	Subscribed share capital.	Paid-up share capital.	Combined bor- rowed and paid-up capi- tal.	Reserve.
	£	£	£	£	Per ct.	£	£	£	£
American Mortgage Company of Scotland.....	31, 995	2, 874	29, 121	16, 949	1. 71	423, 000	85, 600	423, 000	16, 000
British and American Mort- gage Company.....	44, 977	8, 768	36, 214	24, 102	1. 56	517, 800	100, 890	629, 505	12, 000
Colorado Mortgage and In- vestment Company.....	40, 505	7, 874	32, 631	16, 294	2. 00	446, 010	111, 502	443, 410	62, 500
Dundee Mortgage and Trust Investment Company.....	71, 839	11, 628	60, 211	25, 636	2. 34	860, 000	300, 000	856, 527	97, 500
Edinburgh American Land Mortgage Company.....	17, 435	1, 799	15, 636	9, 607	1. 62	250, 000	50, 000	250, 000	12, 500
Scottish American Invest- ment Company.....	109, 469	7, 718	101, 751	56, 619	1. 79	1, 700, 000	358, 694	1, 584, 994	260, 000
Scottish-American Mortgage- Company.....	71, 958	9, 276	62, 682	35, 015	1. 79	1, 000, 000	200, 000	967, 304	103, 525
Total.....	388, 178	49, 932	338, 246	184, 222	1. 82	5, 201, 810	1, 204, 696	5, 179, 740	564, 025

CATTLE AND LAND COMPANIES.

The first cattle and land company formed in the United Kingdom for operations in the United States appears to be the Prairie Cattle Company, of Edinburgh, established in 1880. Its success was so great at once as rapidly to lead to the formation of other companies of the same kind. In Dundee were established the Texas Land and Cattle Company (1881), and the Matador, and the Hansford Land and Cattle Companies (1882). Besides these, Dundee is known to be largely interested in the Arkansas Valley Land and Cattle Company and in the Powder River Cattle Company, both of which have their chief offices in London

Of similar companies Edinburgh now has the following, viz: California Pastoral and Agricultural Company, Missouri Land and Livestock Company, Montana Sheep and Cattle Company, Prairie Cattle Company, Swan Land and Cattle Company, and Western ranches.

WYOMING CATTLE RANCH.

The table (No. 2) given below shows some interesting statistics of the principal of these cattle companies for the year 1885, with a comparison in some particulars with 1884. It gives the total of the several herds, and the calf crop for 1884 and 1885, as well as a statement of the number sold and the prices obtained for one, two, and three year olds. It also shows the average price for all the companies, and the valuation of the herd at the time of the annual report.

TABLE 2.

Name of company.	When formed.	Total of herd.	Calf crop.		Number sold.	Sales.					Valuation per head including bulls.
			1884.	1885.		1885.					
						One-year-olds.	Two-year-olds.	Three-year-olds and upwards.	Three-year-olds and upward, 1884.		
Arkansas Valley Land and Cattle Company.....	1882	24, 315	3, 234	2, 386	5, 145	.....	.....	\$26 75	\$29 15	\$27 84	
Cattle Ranch and Land Company.....	1882	18, 500	4, 223	2, 224	1, 806	.....	.....	28 33	32 23	24 99	
Hansford Land and Cattle Company.....	1882	37, 734	7, 000	4, 800	3, 331	.....	.....	24 40	30 23	24 74	
Matador Land and Cattle Company.....	1882	94, 441	24, 136	19, 501	17, 508	\$12 72	\$19 74	28 50	24 00	17 88	
California Pastoral and Agricultural Company.....	1882	45, 885	7, 339	5, 800	5, 445	.....	.....	27 72	33 09	25 00	
Powder River Cattle Company.....	1882	48, 625	9, 187	7, 475	4, 569	.....	.....	31 01	35 01	28 37	
Prairie Cattle Company.....	1880	124, 212	26, 481	27, 714	22, 068	17 51	23 53	24 57	33 75	16 66	
Swan Land and Cattle Company.....	1883	123, 460	21, 428	20, 236	9, 600	.....	.....	36 62	36 27	25 97	
Texas Land and Cattle Company.....	1881	106, 322	14, 986	17, 949	10, 781	.....	.....	24 51	29 97	14 87	
Western Land and Cattle Company.....	1882	35, 469	7, 262	7, 084	5, 619	.....	25 93	30 88	35 15	26 48	
Western Ranches.....	1883	16, 050	1, 224	1, 650	3, 313	.....	.....	37 81	32 13	27 39	
Total.....		672, 013	126, 500	116, 319	89, 185	*15 11	*23 06	*29 19	*31 81	*23 60	

*Average.

A summary of the foregoing shows the following points, viz:

Total number of cattle	672, 013
Total number sold in 1885	89, 185
Total calf crop in 1885	116, 319
Average price of one-year-olds	\$15 11
Average price of two-year-olds	23 06
Average price of three-year-olds	29 19
Average valuation of herds	23 60

A second table (No. 3) brings out additional particulars of the same companies. Besides showing the total working capital of the companies, whether paid-up or borrowed on debentures or otherwise, and the dividends paid in 1883, 1884, and 1885, it is of interest as containing the quantity of land under their control, whether owned in fee-simple or leased, together with the average cost per acre of the former, and the rent per acre of the latter.

TABLE 3.

Name of company.	Land.				Capital.				Dividends.		
	In fee-simple.		Leased.		Debentures or pre-ferred stock.	Ordinary share capital.	Shares.		1883.	1884.	1885.
	No. of acres.	Cost per acre.	No. of acres.	Rent per acre.			Par of share.	Paid up per share.			
Arkansas Valley Land and Cattle Company.....	16,028	\$19 40	6,080	7	£124,984	£125,000	£10	£5	P. ct. 19	P. ct.	P. ct.
Cattle Ranch and Land Company.....			153,607	2.50	105,600	100,000	5	5	5		
Hansford Land and Cattle Company.....	76,640	3 32	124,000	2.50	17,504	209,740	5	5	6	7	
Matador Land and Cattle Company.....	424,296	1 64	256,367	8.75	200,000	300,000	10	6	6	6	7
California Pastoral and Agricultural Company.....	800,692	2 53	208,891	7	164,289	172,050	10	5		8	5
Powder River Cattle Company.....					100,000	200,000	5	5	6	4	
Prairie Cattle Company.....	156,862	3 22	32,278	6	291,767	294,055	10	5	30 1/2	10	10
Swan Land and Cattle Company.....	578,858	1 81			288,340	461,660	10	6	9	10	6
Texas Land and Cattle Company.....	368,174	1 64	520,986	3.25	240,000	240,000	10	5	12 1/2	6	5
Western Land and Cattle Company.....	75,343	2 80			100,000	100,000	100		15	15	10
Western Ranches.....			153,607	2.50		112,000	5	5		7	4
Total.....	2,016,883	4 42	1,455,796	4.94	1,632,584	2,314,505					

The following is a summary in part of the table, viz :

Amount of land held by the companies :

In fee-simple acres.. 2,016,883
 Leased do... 1,455,796

Total..... 3,472,679

Average cost of land held in fee-simple per acre.. \$4 42

Average rent paid for leased lands..... per acre, cents... 4.94

Total working capital..... £3,947,089

Average dividends :

1883..... per cent.. 8 1/4
 1884..... do... 6 1/4
 1885..... do... 4 1/4

The following tables—(Nos. 4, 5, and 6)—respectively show the several trust, investment, and mortgage companies, the cattle and land companies, and the mining companies, established in the United Kingdom, where investments are in the United States. They also set forth the authorized capital, the paid-up capital, together with the amount of debentures and reserves, and the dividends paid from 1883 to 1885, inclusive :

TABLE 4.—Trust, investment, and mortgage companies.

Name of company.	Head office.	When formed.	Authorized capital.	Paid-up capital.	Par of shares.	Debentures.	Reserve.	Dividends.		
								1883.	1884.	1885.
Alabama Coal, Iron, Land, and Colonization Company.....	London.....	1882	298,498	298,498	{210}			Per cent.	Per cent.	Per cent.
American Freehold Land Mortgage Company.....	do.....	1879	302,300	30,230	20	2,680,000	213,000	10	10	10
American Investment Trust Company.....	do.....	1879	1,000,000	1,000,000	5		40,383	64	7	64
American Land and Colonization Company of Scotland*.....	Glasgow.....	1881	197,880	53,384	10		6,200	8		
American Mortgage Company of Scotland.....	Edinburgh.....	1877	428,000	85,600	10	342,400	16,000	8	8	8
Anglo-American Land Mortgage and Agency Company.....	London.....	1882	500,000	50,000	10	134,611		5	5	5
Arizona Trust and Mortgage Company.....	Edinburgh.....	1883	390,000	164,347	30	171,200		54	64	
British-American Land Company.....	London.....	1884	167,910	167,910	8			7	94	5
British-American Mortgage Company.....	do.....	1877	1,500,000	120,890	{10}	528,615	12,000			
British Land and Mortgage Company of America.....	do.....	1883	1,000,000	30,656	10	65,192				
California Redwood Company*.....	Edinburgh.....									
Canadian and American Mortgage and Trust Company.....	Liverpool.....	1884	100,000	6,000	10	6,600			6	
Colonial and United States Mortgage Company.....	Glasgow.....	1880	600,000	135,000	10	444,613	55,455	10	10	15
Colorado Mortgage and Investment Company.....	London.....	1877	446,010	111,522	10	331,918	62,500	15	15	124
Capital Freehold Land and Investment Company.....	do.....		2,000,000	262,484	10	340,000				
Dundee Investment Company.....	Dundee.....	1882	250,000	75,000	10	174,487	10,000			5
Dundee Mortgage and Trust Investment Company.....	do.....	1876	700,000	130,000	{A2}	560,000	97,500	10	10	10
East Florida Land and Produce Company.....	London.....	1883	200,000	71,610	10	21,500				
East of Scotland Investment Company.....	Dundee.....	1882	240,000	16,000	10		593			
Edinburgh American Land Mortgage Company.....	Edinburgh.....	1876	250,000	60,000	5	200,000	12,500	74	74	532
Florida Land and Mortgage Company.....	London.....	1883	745,000	745,000	10	225,000				
Florida Mortgage and Investment Company.....	Edinburgh.....	1883	500,000	150,000	5					
Iowa Land Company.....	London.....	1881	300,000	150,000	20	145,740	3,563	5	6	534
Irish-American Colonization Company.....	Dublin.....	1880	42,410	35,990	10					
Land, Mortgage, Investment, and Agency Company of America.....	London.....	1881	500,000	100,000	10	141,113		5		
Municipal Trust Company.....	do.....	1879	214,450	214,450	50		1,414	8	34	34
North American Land and Timber Company.....	do.....	1882	500,000	142,802	10	30,000				
North American Land Association.....	do.....	1881	500,000	26,473	5			3		
Oregon Mortgage Company.....	Edinburgh.....	1883	500,000	23,000	5	50,000	987		5	74
Platte Land Company.....	London.....	1879	138,000	138,000	10	27,821			5	
Santa Fé Land Company.....	do.....	1883	875,000	875,000	10					
Scottish-American Investment Company.....	Edinburgh.....	1873	1,700,000	538,684	10	1,224,300	200,000	15	15	56
Scottish-American Land Company.....	do.....	1880	100,000	45,000	10	38,565	1,528			

* Closing business.

† Dividend for 1885, in part.

‡ Including A shares, \$22,000; B shares, \$128,000.

§ Dividend for 1885 partial only.

Scottish-American Mortgage Company.....	1874	1,000,000	200,000	10	787,804	108,835	14	124	124
First Scottish-American Trust Company.....	1879	300,000	300,000	100	.....	45,000	8	8	8
Second Scottish-American Trust Company.....	1879	400,000	400,000	100	.....	53,000	84	84	84
Third Scottish-American Trust Company.....	1879	400,000	400,000	100	.....	42,000	71	336	71
Scottish Californian Orange and Vineyard Company.....	1884	50,000	4,515	2	.....	.....	.....	.....	.....
Scottish Mortgage and Land Investment Company of New Mexico.....	1882	100,000	20,000	10	80,000	.....	.....	.....	.....
South Minnesota Land Company.....	1885	20,000	14,825	1	133,425	.....	.....	7	*24
Texas Land and Mortgage Company.....	1882	500,000	72,500	10	258,715	4,000	6	10	*4
United States Mortgage Company of Scotland.....	1884	1,000,000	25,000	5	64,425	.....	.....	.....	.....
.....	.....	21,223,456	7,835,319	.....	7,237,514	850,515	.....	.....	.....

* Dividend in 1888 in part only.

TABLE 5.—Cattle and land companies.

Name of company.	Head office.	When formed.	Authorized capital.	Paid-up capital.	Par of shares.	Debt-urea.	Reserve.	Dividends.		
								1883.	1884.	1885.
Arkansas Valley Land and Cattle Company.....	London.....	1882.....	\$250,000.....	\$125,000.....	\$10.....	\$124,994.....	.....	Per cent. 10.....	Per cent.	Per cent.
California Pastoral and Agricultural Company.....	Edinburgh.....	1882.....	240,000.....	165,000.....	10.....	88,573.....	.....	7.....	7.....	.....
Cattle Ranch and Freehold Land Company, of Texas.....	London.....	1884.....	100,000.....	100,000.....	5.....	2,400.....	.....	.....	.....	.....
Cattle Ranch and Land Company.....	do.....	1882.....	200,000.....	200,000.....	5.....	5,600.....	.....	5.....	.....	.....
Cedar Valley Land and Cattle Company.....	do.....	1885.....	150,000.....	75,000.....	10.....	.....	.....	.....	.....	.....
Clarendon Land Investment and Agency Company.....	do.....	1884.....	1,000,000.....	84,202.....	10.....	76,968.....	\$4,500.....	.....	.....	6.....
Colorado Ranch Company.....	do.....	1879.....	36,400.....	20,000.....	5.....	13,080.....	.....	.....	.....	.....
Cresswell Ranch and Cattle Company.....	Edinburgh.....	1885.....	320,000.....	.....	5.....	100,000.....	.....	7.....	.....	.....
Dakota Stock and Grazing Company.....	London.....	1883.....	131,020.....	131,020.....	5.....	.....	.....	.....	.....	.....
Espuela Land and Cattle Company.....	do.....	1884.....	500,000.....	500,000.....	5.....	.....	.....	.....	.....	3.....
Hansford Land and Cattle Company.....	Dundee.....	1882.....	210,000.....	200,740.....	5.....	17,564.....	9,353.....	6.....	7.....	.....
Matador Land and Cattle Company.....	do.....	1882.....	500,000.....	300,000.....	10.....	200,000.....	10,000.....	8.....	6.....	7.....
Misouri Land and Live Stock Company.....	Edinburgh.....	1882.....	150,000.....	90,000.....	5.....	60,000.....	.....	10.....	10.....	5.....
Montana Sheep and Cattle Company.....	do.....	1884.....	100,000.....	7,866.....	5.....	.....	.....	.....	.....	.....
Nevada Land and Cattle Company.....	London.....	1883.....	300,000.....	85,000.....	5.....	30,000.....	1,000.....	.....	6.....	.....
New United States Cattle Ranch Company.....	do.....	1883.....	2,500,000.....	43,000.....	5.....	.....	.....	6.....	.....	.....
Powder River Cattle Company.....	do.....	1883.....	300,000.....	200,000.....	10.....	100,000.....	1,157.....	.....	4.....	.....
Prairie Cattle Company.....	Edinburgh.....	1880.....	598,110.....	204,055.....	10.....	291,767.....	4,743.....	204.....	10.....	10.....
Swan Land and Cattle Company.....	do.....	1883.....	750,000.....	461,680.....	10.....	288,340.....	35,909.....	9.....	10.....	6.....
Texas Land and Cattle Company.....	Dundee.....	1881.....	480,000.....	240,000.....	10.....	240,000.....	1,081.....	124.....	6.....	6.....
Western Land and Cattle Company.....	London.....	1882.....	200,000.....	100,000.....	100.....	100,000.....	19,602.....	15.....	15.....	10.....
Western Ranches.....	Edinburgh.....	1883.....	112,000.....	.....	6.....	.....	608.....	.....	7.....	4.....
Wyoming Cattle Ranch Company.....	do.....	1882.....	269,000.....	112,000.....	10.....	20,260.....	.....	6.....	7.....	6.....
			9,317,530.....	2,549,603.....	.....	1,750,575.....	88,855.....	.....	.....	.....

TABLE 6.—Mining companies.

Name of company.	Head office.	When formed.	Authorized capital.	Paid-up capital.	Par of shares.	Debtless.	Reserve.	Dividends.		
								1883.	1884.	1885.
Arizona Copper Company.....	Edinburgh.....	1884.....	\$275,000	\$275,000	25	.....	.....	Per cent.	Per cent.	Per cent.
California Gold Mine Company.....	London.....	1881.....	127,721	127,721	1	£3,483	.....	5	10	.....
Colorado United Mining Company.....	do.....	1870.....	310,625	310,625	5	.....	.....	.....	.....	.....
Consolidated Mining Company.....	do.....	1878.....	100,000	100,000	1	28,877	.....	.....	.....	.....
Denver Gold Company.....	do.....	1882.....	36,725	36,725	5 ^a	.....	.....	.....	.....	.....
La Plata Mining and Smelting Company.....	do.....	1883.....	400,000	380,744	1	15,000	.....	.....	.....	.....
Missouri Lead Mining and Smelting Company.....	do.....	1879.....	45,000	45,000	10	10,000	.....	.....	.....	.....
Montana Company.....	do.....	1883.....	680,000	653,546	2	17,810	.....	.....	.....	15
New Emma Silver Mining Company.....	do.....	1882.....	785,000	785,000	10	22,470	.....	.....	.....	.....
Oregon Hydraulic Gold Mines.....	do.....	1875.....	60,000	60,000	4	.....	.....	.....	.....	.....
Republican Mountain Silver Mines.....	do.....	1880.....	150,000	115,460	1	.....	.....	Per share.	Per share.	Per share.
Richmond Consolidated Mining Company.....	do.....	1871.....	270,000	270,000	5	.....	£58,102	15 ^a	5 ^a	.....
Russell Gold Mining Company.....	do.....	1884.....	300,000	300,000	1	.....	.....	.....	.....	.....
Ruby and Dunderberg Consolidated Mining Company.....	do.....	1885.....	150,000	84,264	1	25,875	.....	.....	.....	.....
Sierra Buttes Gold Mining Company.....	do.....	1870.....	245,000	245,000	2	.....	20,000	1	1	1
Sierra Buttes Mine.....	do.....	1870.....	281,250	281,250	2	.....	.....	4	3	3
Plumas Eureka Mine.....	do.....	.....	4,796,321	4,670,335	.....	128,615	78,102	.....	.....	.....

*Closing up.

^aMines being opened.

It appears from these tables that the companies were organized in the following years, viz:

Class and year of organization.	No. organized.
<i>Trust, investment, and mortgage companies.</i>	
1864	1
1873	1
1874	1
1876	1
1877	2
1878	2
1879	7
1880	3
1881	4
1882	7
1883	6
1884	4
1885	1
<i>Cattle and land companies.</i>	
1879	1
1880	1
1881	1
1882	9
1883	5
1884	4
1885	2
<i>Mining companies.</i>	
1870	3
1871	1
1875	1
1878	1
1879	1
1880	1
1881	1
1882	2
1883	2
1884	2
1885	1

The following is a summary of the capital authorized, paid up, and borrowed on debentures, or otherwise, viz:

Companies.	Authorized capital.	Paid-up capital.	Borrowed capital.
Trust, investment, and mortgage companies	£21,023,456	£7,335,319	£7,237,514
Cattle and land companies	9,317,530	3,543,603	1,759,575
Mining companies	4,796,321	4,670,335	123,615
Total	35,137,307	15,549,257	9,125,704

Grand total, £59,812,268.

An examination of the tables with reference to the income from these large investments discloses a return that must be far from satisfactory to the shareholders, except in the case of the Dundee companies. The trust, investment, and mortgage companies of this place paid an average dividend of $6\frac{1}{2}$ per cent.; its cattle and land companies an average of 4 per cent. But of the whole number—forty-two in all—of trust, investment, and mortgage companies in the United Kingdom, including those of Dundee, two paid $12\frac{1}{2}$ per cent.; two paid 10 per cent.; three between 8 and 9 per cent.; three between 5 and $7\frac{1}{2}$ per cent.; five at the rate of 5 per cent.; two less than 3 per cent., and twenty-five paid no dividend.

Of the twenty-three cattle and land companies two paid 10 per cent.; one, 7½ per cent.; three, 6 per cent.; two, 5 per cent.; two less than 5 per cent., and thirteen paid no dividend.

Of the mining companies—sixteen in number—one paid 15 per cent.; one, 5s. per share; one, 3s. per share, and one, 1s. per share, and twelve paid no dividend.

HOLDINGS OF LAND.

The means are not at hand for a full and accurate statement of the amount of land in the United States owned or otherwise held by these foreign companies, but a few statistics are available.

As appears from table 2, the chief cattle and land companies own in fee simple, 2,016,883 acres, and hold under lease, 1,455,776 acres. No trustworthy statement is found as to the amount in the hands of mining companies. The Clarendon Land and Investment Agency Company have 94,000 acres in Texas, in fee simple, and 8,780 acres under lease. They have also 210,000 fenced in. The British American Land Company have "upwards of 193,000 acres." The East Florida Land and Produce Company have 50,000 acres of farming lands in Florida. The Florida Land and Mortgage Company own 2,300,000 acres in Florida. The Irish-American Colonization Company own 18,569 acres in Murray County, Minnesota. The Santa Fé Land Company own 4,300,000 in the county of Santa Fé, New Mexico. The North American Land and Timber Company own a large tract in Louisiana. A summary of the foregoing is as follows:

Companies.	Fee simple.	Leased.
	<i>Acres.</i>	<i>Acres.</i>
Cattle and land companies	2, 016, 883	1, 449, 776
The foregoing companies so far as known	9, 955, 569	7, 780
Total	12, 972, 452	1, 457, 556

It is to be said as to the lands held in Texas that on entering the Union the State stipulated for the retention of all the vacant and unappropriated land, to be disposed of as it might provide. Lands held in that State are accordingly understood not to be affected by the recent action of the Federal Government in regard to fencing and otherwise.

As appears from the tables and statistics already given, the greater number of these foreign companies are of recent formation, a few are as old as ten years, but the average is only of about four or five years. The extent and rapidity of development have been remarkable. As to some of them, it may be too early to predict what success they will reach, but in general they have not succeeded to the expectation of the shareholders. The Dundee companies have, however, been exceptional in this respect, and have prospered through their careful management. The year 1885 was particularly unfavorable to the cattle and land companies, and the action of the President as to the fencing in of unoccupied lands, together with the increasing uncertainties of the business, has abated the disposition for establishing any new companies. Certain legislation proposed by the present Congress as to the acquirement of public lands by foreigners is said also to have had a restraining effect. And altogether it seems unlikely that, in the near future at least, there will be any such development in the direction of these enterprises as has been seen within the past five or six years.

A. B. WOOD,
Consul.

UNITED STATES CONSULATE,
Dundee, April 28, 1886.

COMMERCE OF FRANCE.

REPORT OF CONSUL NEWMARK, OF LYONS.

On the 26th December, 1885, the French minister of commerce addressed a circular to the presidents of the different chambers of commerce in France, of which the following is a translation:

MR. PRESIDENT: For a considerable time my department has been engrossed with the effects upon the condition of our export commerce, brought about by the ever-increasing and more active competition of the commerce and industry of foreign countries. With a view to ameliorate the present situation, the cause of which can be directly traced to the insufficiency and even total absence of knowledge, as to the requirements for the creation and development of foreign outlets, one of my predecessors, without relinquishing the publication of the "Annals of exterior commerce," decided in 1877 upon the creation of a new monthly review, namely, The French Consular Bulletin, whose object was to popularize the commercial reports by the diplomatic and consular officers of France, addressed to the ministry of foreign affairs; the intervals of publication, however, of this journal being found too great, gave rise in 1883 to a new periodical, a weekly print, The Official Monitor of Commerce, whose programme is to extend the circulation of the more directly important communications contained in the correspondence of all consuls, French as well as foreign, and coming from all other sources of information. Stimulated by the publicity given to their labors, our consular officers have redoubled their efforts, and have shared the views of this Department upon the utility of furnishing our countrymen individually information of the same nature, whenever applied for.

From its side, the Government has done its utmost to favor the creation of French chambers of commerce abroad; and upon my proposition as reporter of the Budget committee (of the Chamber of Deputies) a special credit was obtained in 1885 for a certain number of chambers of commerce, to be divided among them for the special purpose of contributing towards the establishment of commercial museums.

But aside from these official sources of information, has not individual effort in the direction of actual commercial activity a worthy and most important field before it for the gathering of valuable information in those outlets themselves; in acquiring knowledge as to the tastes and requirements of those markets; in making known the products of our industries, and having them duly appreciated, and in generally extending our present commercial relations abroad, and fostering their improvement and increased development?

No doubt associations of this nature and with this object have already been formed, with the worthy object of favoring our young countrymen abroad and of developing our home industries. But these efforts, whose authors deserve all our sympathies, must be supported and accompanied by other measures. Our competitors set us an example worthy in every respect to draw our particular attention. Well understanding that individual efforts can only exercise a limited and easily exhausted activity, they have embraced the principle of united association. In this way several houses have concerted in sending out at their mutual expense agents well furnished with samples to look after their interests. The development of this combination has given rise to the system of co-operative travel, undertaken in the most economical manner possible, by a group of commercial travelers intrusted with the representation of the industries of a certain region or of a whole country. One single association in this manner organized in one year 156 voyages, several of which were to the remotest and least-known countries of the globe.

This association, combining its action with that of another of a similar nature; is at present occupied with a scheme of chartering a vessel and loading it with samples and with merchandise for sale, thus establishing a sort of floating exhibition that will be presided over and managed by numerous commercial representatives, and will be shown through all the ports in the north coast of Africa and those of the Levant.

Such efforts as these, plainly illustrating the extent of the present intense foreign competition, should inspire our manufacturers and merchants to ever-increasing exertions.

I have thought fit to present these facts to you, and to make particular mention of them to all the chambers of commerce, with the double object of inviting their special attention to the subject, the high importance of which will not escape you, and to solicit the opinion as to the advisability of a meeting in Paris of their respective presidents or chosen delegates for the purpose of examining and more minutely entering into the phases and requirements of the present situation.

Around us and on every side nations are making strenuous efforts to control their home markets themselves, but nevertheless the superabundance of their productions

compels them to seek and develop foreign outlets. In this fight for the mastery of the most distant markets the prize will belong to those who, joining perseverance with enterprise and activity, will not recoil or withdraw in the presence of the difficulties and obstacles of their first endeavors.

The significance of your duty is therefore singularly obvious; we must promptly and resolutely put our shoulder to the wheel. The question before us—you will not require it—is one whose solution interests not only the whole future of French commerce, but both the prosperity of our industries and the well-being of our working classes.

Receive, Mr. President, the assurance of my very distinguished consideration.
The Minister of Commerce,

LUCIEN DAUTRESME.

As might be expected, this circular met with universal favor in France; it received the indorsement of the press and the public generally, and although but a few weeks have intervened since its issuance, some of the suggestions thrown out by it have assumed practical shape.

TRADE EXTENSION.

A new syndicate has just been formed in Paris, having for its object the protection and propagation of the products of French industries, to send out inspectors to all countries where they can be practically introduced, and to install representatives of trade in all markets where it may be found necessary and useful.

This syndicate has laid out four routes of exploration. The first comprises the United States, Canada, Mexico, Guatemala, Nicaragua, and the West Indies; the second, Venezuela, the United States of Colombia, Ecuador, Peru, Bolivia, Chili, the Argentine Republic, and Brazil; the third includes Australia, Tasmania, New Zealand, New Caledonia, New Hebrides, Eastern Asia, China, and Japan; the fourth is Africa, the Levant, and the whole of Western Asia.

The syndicate is confident of creating in all these foreign countries outlets for French industries, and to inspire their respect and appreciation for the home trade marks. To participate in the advantages of this permanent representation, subscribers to this syndicate, whether manufacturers, merchants, ship-owners, or others, pay an annual subscription of \$40 for any two of the above routes, or \$60 for all four, the subscription being paid only upon the departure of the inspectors, and making no subscriber liable for more than his year's subscription.

All those business houses becoming members of the syndicate, will have the privilege of having their business cards, samples, and price-lists distributed all over the markets mentioned through the medium of reliable agents.

I do not deem it necessary to comment upon the importance of the recommendations made in the circular of the minister of commerce, or of the places of the syndicate just formed to technically carry them out, nor to suggest their applicability to the condition of the export trade of the United States.

The desirability of finding new outlets for the surplus products of our various industries is recognized as a matter of vital concern, and any suggestions that might lead to such a result would doubtless receive serious consideration.

The United States should control for its products the trade at least of all the Americas and a fair share of that of other portions of the globe. Nothing would so largely contribute to such a result as intelligent co-operation upon the part of its merchants and manufacturers.

Let some such plan as suggested in the above circular be adopted. A national convention composed of delegates from all the chambers of

commerce and boards of trade of the country should be held for the purpose of considering this and kindred questions. Such a body, composed, as it would be, of the highest order of intelligence, bringing to its deliberations a full and comprehensive knowledge of the situation, thoroughly conversant with the immense and varied resources of our whole country, would, almost beyond a doubt, evolve some practical plan for the increase of our export trade that would be of lasting benefit to all classes of our people.

M. J. NEWMARK,
Consul.

UNITED STATES CONSULATE,
Lyons, France, March 2, 1886.

GROWTH OF THE TEXTILE INDUSTRIES IN GERMANY.

REPORT OF CONSUL-GENERAL RAINE.

I have the honor to report that the development of the textile industry in Germany attracts considerable attention, not only in this Empire, but also in Great Britain, France, &c.

An official publication in the "Zeitschrift des königlich preussischen statistischen Bureau's," compiled from the annual reports of German boards of trade and the comprehensive material of the statistical bureau of the Empire by an expert, L. Francke, will undoubtedly prove instructive to manufacturing interests in the United States.

The official publication shows the development of this branch of German industry since 1879.

To the figures as given by Mr. Francke for 1883 and 1884, I add those for 1885, as published by the statistical bureau of the Empire.

DEVELOPMENT OF THE INDUSTRY.

In the textile industry, the article says, a process of transformation has taken place, which took its first impulse from the invention of Cartwright's mechanical loom in 1784.

To discuss the importance of the transition from hand or house weaving to weaving by loom, in respect both to culture and political economy, would be superfluous. It is a fact that the use of mechanical looms now-a-days has spread to all parts of the globe. While in England the mechanical loom has almost entirely replaced the hand loom, Germany has followed rapidly, and the old loom gives way to its younger but more efficient competitor.

The German textile industry, by undergoing this process of transformation, has attained an astonishing degree of efficiency, and constitutes now one of the most important resources of national wealth, protected and supported, Mr. Francke asserts, in a great measure, by the national economic policy inaugurated in 1879. In the official publication stress is laid upon the circumstance that, although all branches of industrial activity have shared in the change for the better that followed the protection of domestic labor, none of them have, in comparatively so short a time, reached such extraordinary success as the German textile industry.

For the correctness of this assertion he points to the increased consumption of *raw material*. The same has, since 1880, constantly increased in the textile industry.

IMPORTS AND EXPORTS.

The amount of excess of imports over exports were, in double centners, as follows:

Year.	Cotton.	Wool.	Flax.	Hemp.	Jute.	Raw silk.
1880.....	1,267,862	544,302	181,391	171,484	173,192	20,206
1881.....	1,392,675	652,872	183,875	199,284	184,004	23,195
1882.....	1,383,796	750,703	215,284	148,840	233,456	24,955
1883.....	1,624,893	782,477	253,458	199,619	330,835	23,784
1884.....	1,594,019	937,558	270,305	208,536	334,228	27,340
1885.....	1,568,816	886,927	418,942	187,402	411,123	26,586

Hence the excess of imports over exports of raw material, as compared with the year 1880, has risen by the following percentages, viz:

Articles.	1881.	1885.	Articles.	1881.	1885.
	<i>Per cent.</i>	<i>Per cent.</i>		<i>Per cent.</i>	<i>Per cent.</i>
Cotton.....	18.6	14.8	Hemp.....	18.7	9.5
Wool.....	72.2	63.1	Jute.....	93.0	137.5
Flax.....	105.7	220.0	Raw-silk.....	35.3	31.2

It is obvious that, considering an importation of raw material to such an extent, also *production* must have experienced a proportionate increase.

This can indeed be proven, first from the considerable decrease which the imports of textile articles of all descriptions have shown since 1879, and, on the other hand from the considerable increase of exports of manufactures of the German textile industry which made its appearance since that year.

If to this end we cast a glance upon German statistics, we find, in the first place, that the *importation* of principal textile fabrics into the German Zollverein since 1879 amounted to tons (each 100 kilograms) as follows:

Year.	Manufactures of—					Clothing, underclothing, millinery.
	Cotton.	Wool.	Flax.	Silk.	Half-silk.	
1879.....	2,777	7,485	500	429	316	378
1883.....	1,562	2,106	297	330	250	223
1884.....	1,617	2,058	287	378	278	284
1885.....	1,527	1,733	254	395	299	263

Hence in all such articles a decrease of imports has taken place, largest in woollen articles, imports as early as 1883 having diminished by three and a half times the amount imported in 1879, while in the latter the decrease in manufactures of cotton amounted to 43.8 per cent.; flax, 44.2 per cent.; manufactures of silk, 23.1 per cent.; half-silk, 20.9 per cent.; and in clothes, underclothes, &c., 41 per cent.

Against this reduced importation stands a considerably increased production of textile fabrics in Germany which, on one hand, is shown by the extension and greater activity of existent mills, by the augmentation of spinning and weaving mills, by the considerable increase of the number of hands employed in textile-industry; and on the other hand, by a considerable rise of the quantity of textile fabrics exported to foreign countries.

Such exports from the German Zollverein were as follows, in tons (22 cwts.):

Year.	Cotton.		Woolen.		Silk and half-silk articles.	Clothes, underclothing, and millinery.
	Piece-goods.	Hosiery.	Piece-goods.	Hosiery, not printed.		
1879.....	11,756	1,834	12,683	546	1,691	2,142
1883.....	18,753	6,292	20,900	2,128	4,879	5,583
1884.....	15,520	6,636	21,108	2,499	5,268	6,390
1885.....	16,849	7,079	22,668	2,639	4,710	5,642

Of course, Mr. Franke says, this extension of the market abroad for German textile fabrics could be attained only after violent struggles against the extremely strong and pertinacious competition of England and France, a competition which permanently can be defeated only by the most careful attention to all orders and by really good workmanship and material of the articles ordered.

F. RAINE,
Consul General.

UNITED STATES CONSULATE-GENERAL.
Berlin, April 19, 1886.

PRICES OF FOOD IN THE GRAND DUCHY OF HESSE.

REPORT OF COMMERCIAL AGENT SMITH, OF MAYENCOE.

Commercial Agent Smith transmits the following record of average prices of the leading articles of food in the Grand Duchy of Hesse during the months of October, November, and December, 1885, and January, February, and March, 1886, as published by the Government at Darmstadt:

[Prices per kilogram, about 2½ pounds avoirdupois.]

Articles.	October.	November.	December.	January.	February.	March.
	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>	<i>Cents.</i>
Beef.....	31.6	31.4	31.6	31.4	31.1	30.9
Veal.....	26.1	25.9	24.7	25.2	25.2	24.9
Mutton.....	26.4	25.7	25.7	25.7	26.8	26.6
Pork.....	27.8	27.6	27.0	27.6	27.6	27.8
Wheat flour.....	9.0	9.2	9.0	9.0	9.0	9.0
Rye flour.....	6.6	6.6	6.6	6.6	6.6	6.6
Rye bread.....	5.4	5.4	5.4	5.4	5.4	5.4
Butter.....	47.3	46.4	48.5	42.6	42.6	43.5
Burnt coffee*.....	67.3	67.1	67.1	67.3	67.5	66.8
Eggs (per ten).....	16.0	17.6	18.4	17.8	15.7	13.5
Milk (per liter).....	4.0	4.0	4.0	4.0	4.0	4.0

* In the bean.

[Prices per 100 kilograms, 220½ pounds.]

Wheat.....	\$4 13	\$4 12	\$4 10	\$4 12	\$4 12	\$4 22
Rye.....	3 65	3 59	3 56	3 54	3 54	3 59
Barley.....	3 64	3 61	3 58	3 56	3 52	3 53
Potatoes.....	88.7	86.8	87.5	91	93	98
Peas.....	6 72	6 62	6 65	6 64	6 50	6 31
Beans.....	6 76	6 66	6 56	6 60	6 52	6 41
Lentils.....	8 61	8 61	8 74	8 80	8 82	8 76
Onions.....	3 29	3 29	3 28	3 32	3 33	3 41
Hay.....	1 42	1 45	1 47	1 49	1 53	1 60
Straw.....	97	98.5	1 02	1 07	1 09	1 10

EUROPEAN WOOL IMPORTS.

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During the six months under consideration petroleum brought 5.4 cents per liter, and coal 41.4 to 42.3 cents per 100 kilograms (about \$4.25 per ton of 2,240 pounds) in 1885, 41.6 in January, and 42.1 cents in February and March, 1886.

The prices of 1885 and 1884 were as follows :

Articles.	1885.	1884.	Articles.	1885.	1884.
Beef.....per kilogram..	\$0 31	\$0 32	Butter.....per kilogram..	\$0 44	\$0 47
Veal.....do.....	25	26	Coffee.....do.....	68	71
Mutton.....do.....	26	27	Eggs.....by the ten..	14	14
Pork.....do.....	27	27	Milk.....per liter..	04	04
Wheat flour.....do.....	09	09	Wheat.....100 kilograms..	4 32	4 52
Rye flour.....do.....	06	06	Rye.....do.....	3 80	3 87
Rye bread.....do.....	05	05	Barley.....do.....	3 91	3 84
Potatoes.....100 kilograms..	1 01	1 06	Hay.....do.....	1 38	1 45
Peas.....do.....	6 83	7 16	Straw.....do.....	1 02	1 22
Beans.....do.....	6 80	6 99	Coal.....100 kilograms..	42	42
Lentils.....do.....	8 24	9 12	Petroleum.....liter..	05	05
Oats.....do.....	3 57	3 57			

JAMES HENRY SMITH,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Mayence, April 6 and May 26, 1886.

WOOL STATISTICS.

REPORT OF CONSUL SOHOENHOF, OF TUNSTALL, ON THE PRODUCTION AND PRICES OF WOOL.

I have collected the statistics of the wool supply of Europe, for the last twenty-six years, and the prices of principal grades in the English market for the same period. Messrs. Helmuth, Schwartz & Co. have assisted me with their tables and trade circulars in the compilation of wool statistics and prices. The statistics of sheep are taken from the agricultural returns of Great Britain, France, Germany, and other countries.

Number of bales imported into the principal European ports, of extra European wools (including Turkish wools, mohair, alpaca, and camel's hair, during each of the calendar years from 1860 to 1885, inclusive, in thousands of bales.

Year.	Australasian.	Cape.	River Platte.	Other sorts.	Total.	Year.	Australasian.	Cape.	River Platte.	Other sorts.	Total.
1860.....	186	61	40	257	544	1873.....	552	160	268	386	1,366
1861.....	212	71	59	277	619	1874.....	652	164	250	366	1,432
1862.....	227	70	67	274	638	1875.....	700	176	248	379	1,503
1863.....	242	72	81	302	697	1876.....	771	171	272	353	1,567
1864.....	302	74	89	328	793	1877.....	824	170	278	337	1,609
1865.....	332	100	135	293	860	1878.....	791	164	267	383	1,605
1866.....	349	107	156	379	991	1879.....	826	183	247	380	1,616
1867.....	413	133	197	308	1,046	1880.....	864	202	270	427	1,763
1868.....	491	148	240	287	1,166	1881.....	932	197	276	315	1,720
1869.....	500	144	243	273	1,162	1882.....	1,019	194	320	384	1,831
1870.....	549	145	222	237	1,153	1883.....	1,016	190	327	297	1,830
1871.....	567	149	221	387	1,324	1884.....	1,135	189	358	397	2,079
1872.....	523	155	237	422	1,337	1885.....	1,095	183	390	360	2,028

Bales of wool imported into European ports during each of the calendar years from 1860 to 1885, inclusive, reduced to pounds.

[The average weight per bale is taken as 355 pounds for Australasian, 270 pounds for Cape, 875 pounds for River Platte, and 280 pounds for sundry wools, in thousands of pounds.]

Year.	Australasian.	Cape.	River Platte.	Other sorts.	Total.	Year.	Australasian.	Cape.	River Platte.	Other sorts.	Total.
1860....	66,030	16,470	35,000	71,960	189,460	1873....	195,960	43,200	234,500	108,080	581,740
1861.....	75,280	19,170	51,625	77,560	223,555	1874....	231,460	44,240	218,750	102,480	596,930
1862.....	80,585	18,900	58,625	76,720	234,830	1875....	244,500	47,520	217,000	106,120	618,140
1863.....	85,910	19,440	70,870	84,560	260,780	1876....	273,705	46,170	188,000	98,840	556,715
1864.....	107,210	19,980	77,875	91,840	296,905	1877....	292,520	45,900	243,250	94,360	676,030
1865.....	117,860	27,000	118,125	82,040	345,025	1878....	280,805	44,280	233,625	107,240	665,950
1866.....	123,895	28,890	136,500	106,120	395,405	1879....	293,230	49,410	216,125	100,800	659,565
1867.....	146,615	35,910	172,375	84,840	439,740	1880....	306,720	54,540	236,250	119,560	717,070
1868.....	174,305	39,960	210,000	80,360	504,625	1881....	330,860	53,190	241,500	88,200	713,750
1869.....	177,500	34,840	212,625	77,000	508,005	1882....	361,745	52,340	280,000	108,640	802,765
1870.....	194,495	39,150	194,250	66,360	494,655	1883....	360,680	51,300	286,125	83,160	781,265
1871.....	201,285	40,230	193,370	108,360	543,245	1884....	402,925	51,030	313,250	111,160	878,365
1872.....	185,665	41,850	207,375	118,160	553,050	1885....	388,725	49,410	341,250	100,800	880,185

While the imports of foreign wools into European ports have nearly quadrupled within the period, the aggregate of the number of sheep kept by European countries has been diminished but slightly under this heavy pressure of outside wool supply, chiefly owing to the fact that wool is not the only item yielding revenue to the farmer in sheep-raising.

The number of sheep in the principal European countries stands as follows for the two years coming nearest to the terminal points of the period under review :

Number of sheep and lambs kept by each of the under-mentioned countries in Europe in the years nearest 1860 and 1885 for which data were obtainable.

Countries.	Nearest 1860.		Nearest 1885.	
	Year.	Number.	Year.	Number.
United Kingdom	1860	32,960,000	1885	30,086,200
France	1862	29,529,678	1881	22,302,500
Germany	1860	28,016,000	1883	19,189,715
Russia	1860	45,296,700	1882	47,008,968
Austria-Hungary	1869	20,103,000	1880	13,100,000
Belgium	1853	583,485	1880	365,400
Denmark	1866	1,193,861	1881	1,470,048
Holland	1860	865,820	1883	795,521
Italy	1874	6,977,104	1882	8,596,108
Norway	1855	1,028,954	1875	1,686,366
Sweden	1860	1,520,000	1883	1,412,494
Total		168,074,611		145,923,258

OTHER COUNTRIES.

Countries.	Year.	Number.
Spain	1878	16,939,288
Servia	1882	3,620,750
Greece	1880	2,921,917
Thessaly		1,500,000
Portugal	1882	2,977,454

Of these last-named states I have no data for 1860. But it is fair to assume that if there is a decrease from 1860 that the percentage of decrease is not greater than the decrease in the number of sheep of the above-mentioned for which comparison is made, to wit, about 13½ per cent.

The sheep in Great Britain are on the increase again. From 1879, in consequence of the sheep rot, which broke out in that year, they declined from 32,237,958 to 27,448,220 in 1881, the lowest number reached.

Averaging the annual wool clip at 4 pounds per sheep for the whole of Europe, which it may be said is above the average usually allowed, then the decline in the European clip would be about equal to 100,000,000 pounds, against an increase in foreign supply of 690,725,000 pounds.

The wool prices, under the influence of this increasing supply, and under various trade aspects, have since undergone the following changes:

Prices of leading descriptions of wool, notably of Australian, Cape, River Plate, and English growth, as they stood on the 31st of December of each year, from 1860 to 1885, inclusive.

[Cents per pound.]

Year.	Australasian.					Eastern Cape.		Buenos Ayres, average grease.	Peru, middling.	Donakoi, average carding.	East Indian, yellow.	Lincoln, hogs.	Alpaca, Jelay super fleeces.	Mohair, Turkish, fair average.
	Port Phillip, good to soap fleeces.	Port Phillip, good average grease.	Sydney, average grease.	Adelaide, average grease.	New Zealand, super grease.	Extra super snow white.	Average fleeces.							
1860.....	54	50	25	24	31	56	37	20	32	18	15½	44½	54	71
1861.....	49	26	21	20	29	50	32	16	27	18	16	42	53	76
1862.....	52	28	23	22	29	52	34	16½	28	23	20	47	78	84
1863.....	50	28	22	22	30	54	35	16	31	24	20	52	62	73
1864.....	50	28	22	21	29	50	32	14½	34	24	19½	64	66	76
1865.....	53	30	25	24	32	51	34	16	34	25	20½	58	80	86
1866.....	52	26	21	22	28	48	32	15	30	22	15½	48	76	86
1867.....	47	22	17	17	24	39	25	12	20	16	15	34	52	58
1868.....	44	23	18	17	24	41	26	11	21	18	16	41	70	86
1869.....	40	20	17	15	22	37	21	10½	19	17	13	39½	56	62
1870.....	39	19	16	15	22	38	22	9½	21½	19	15½	36	67	76
1871.....	54	28	25	24	31	54	34	16½	32	29	19½	55	70	90
1872.....	60	32	27	26	34	55	34	16½	31	27	24	56	62	89
1873.....	56	30	25	24	32	50	30	15½	28	30	20	52	65½	86
1874.....	52	28	23	22	30	51	31	15½	28	21	19	46½	64	81
1875.....	49	26	22	20	28	48	28	14½	28½	22	19	40	60	86
1876.....	50	27	23	21	29	48	28	14½	28½	21	12½	38	52	76
1877.....	47	25	20	19	27	42	24	13	23½	18½	15	32	41	74
1878.....	42	22	18	17	24	41	21	12	19	15	14½	28	33	46
1879.....	44	25	20	18	26	43	24	13½	22	19	18	31	38	55
1880.....	47	26	22	20	27	45	24	15	23	21	19½	29	30	46
1881.....	44	24	21	19	25	42	24	14	22	19	20½	26	33	44
1882.....	45	25	21	18	25	42	23	13½	19	17½	19	21	30	40
1883.....	44	25	20	18	25	41	22	13	20	16	18	20½	33	38
1884.....	43	23	19	16	24	39	21	12	14½	14½	15	21½	29	37
1885.....	34	19	26	13	20	32	17	9	14	14½	14½	20	26	30

The lowest price ever reached before within the past twenty-six years was in 1869-'70, from which decline, however, prices soon recovered. The present prices average about 15 per cent. below those of 1869-'70 on foreign wools and nearly 50 per cent. below the prices of English wools ruling in 1869-'70.

J. SCHOENHOF,
Consul.

UNITED STATES CONSULATE,
Tunstall, March 11, 1886.

PRODUCTION AND CONSUMPTION OF WOOL.*REPORT OF CONSUL WIGFALL, OF LEEDS.*

From an editorial review of the subject in the Yorkshire Post of the 15th instant, I make the following memoranda relative to the present condition and outlook of the wool trade. The Post is the leading conservative newspaper of this district, and its political leanings in all commercial questions are towards the so called fair-trade and imperial policy of that party, in which, as is known, the colonial relations bear an important part.

It is said that wool has been a very considerable factor in the development which British commerce has undergone within the past forty years. More than any other influence it is thought to have been efficient in building up the southern colonies, which are regarded as the most reliable market for British manufactures.

As the basis of one of the most profitable home industries it is thought to have possibly contributed quite as much benefit to the country as the cotton manufacture, though its gross annual production may not have been above half the latter in amount of value. This result is attributed apparently to the alleged sound and steady paying character of the woollen manufacturing trade, and it is claimed that if it has had no fat years to compare with cotton, it has also had no years of famine or disaster. It is called a much less speculative business, because less liable to extreme fluctuations.

OVERPRODUCTION.

The present is said to be the first really ruinous season experienced by wool-growers since the revival of 1873, when the price of Port Philip unwashed wool ruled during a great part of the year at about 15½ pence per pound in London.

Like every other class of staple producers, wool-growers are reported to have enormously increased their output, but until now without any seriously felt glut. Had the steady and quiet increase of consumption gone on, the market, it is thought, might have easily absorbed the annual increase of production. But consumption is considered to have evidently undergone a sharp check in one or two important quarters. The conspicuous absence of continental buyers at the late sales is regarded as giving a sinister indication of the state of trade among them, while, to counterbalance this loss, there is little appearance of growth elsewhere.

It is believed that all over the world the wool trade will be weakened by the developments of the past few months, and that this injurious influence may extend even to the United States. The mass of raw material is thought now so huge as to be likely to cause nervousness on the part of holders.

WORLD'S CONSUMPTION OF WOOL.

In an average year it is estimated that one pound of wool is grown to two and one half pounds of cotton; but the life of a piece of woollen cloth is considered to be more than double that of a piece of cotton. The strain on the market to absorb 19,000,000 pounds of wool, therefore, it is

said, may be quite as great as that of taking 4,000,000,000 pounds of cotton (equal to 10,000,000 400-pound bales) per annum. If the world's population be reckoned at 700,000,000 souls, a consumption of two and one-half pounds per head every year would be required in order to work off each new clip; and this without considering the shoddy question. If the future possibilities of consumption were to be pressed to a practical issue, very nearly one-half of the world's population, it is said, would have to be put on one side as non consumers of wool. On the most liberal estimate, the author of the article thinks 400,000,000 of people may be more or less acquainted with its use; and of these many millions know it only at second hand. In civilized countries even there is said to be a wide range of variation in the consumption of woollen manufactures. Italy is given at 4 shillings (97 cents) per head per annum; Russia, 6 shillings (\$1.46); Germany, 9 shillings (\$2.19) per head at the latest calculation, but thought since to have risen to the English and Belgian level, which is 15 shillings (\$3.65) per head per annum. The highest European average is reckoned to be France, at 16 shillings (\$3.89) per head; while the Americans are said to top the list with a rate of 19 shillings (\$4.63) per head; here attributed, however, rather to higher cost than to greater actual consumption.

As favoring the future of wool the fact is adduced that it is both widely raised and widely used to an extent as great as almost any article of commerce; and that, unlike mining products, it comes into the market in regular periodic volume whose measure can be taken with reasonable accuracy, so that, while it may vary a few million pounds a year, there can never be in it any pronounced extreme either of deficiency or abundance.

WORLD'S PRODUCTION OF WOOL.

Referring to Dr. Neumann-Spallart, and such cosmopolitan statista, it is said that the wool production of the globe has been approximately gauged, and that its growth from year to year can be followed with some degree of certainty.

The latest German estimate is placed at 860,000,000 kilograms, equal to about 1,897,000,000 pounds. This, however, is said to be largely based on returns two or three years old, allowing for which this year's wool clip is considered not likely to have been less than 2,000,000,000 pounds. Europe is supposed to have produced about 44 per cent. of this total. Dr. Neumann-Spallart's figures are given as for Europe, 374,000,000 kilos, or about 823,000,000 pounds; and for "out of Europe," 478,000,000 kilos, or about 1,050,000,000 pounds. To the European clip the United Kingdom is said to contribute an average of 110,000,000 to 115,000,000 pounds, equal to about 4 pounds per head of its 29,000,000 sheep and lambs.

As nearly as can be ascertained, Great Britain is said to manufacture nearly three times the quantity of wool that it grows, which expansion of its woollen industry this Kingdom is said to owe mainly to its Australian colonies.

Scotch tweeds, it is said, could never have been much more than a poetic name but for Botany Bay wool, and it was the merino sheep of Darling Downs that enabled Bradford to challenge France and beat her on her own ground.

The article proceeds with a review of the Australian outlook, which I quote entire:

In little more than one generation Australia has raised herself from insignificance to the second, if not the very highest place among wool-growing countries. She has

only one possible superior, and that is Russia, but Russia's claim to supremacy rests on very dubious statistics, and even if it had been justified a few years ago, the tables have probably been turned in favor of Australia since. The Russian clip has been estimated at 177,000,000 kilos, or, in round numbers, 390,000,000 pounds, a large proportion of it being washed, and having lost in washing from 50 to 60 per cent. of its original weight. The equivalent of the whole in greasy wool would be at least 420,000,000 pounds, and there is thus very little risk of exaggeration in claiming for Australia the foremost place among wool-growers. Measured by money value, she has an undisputable lead, one pound of some of her choice clips being worth 12 pounds or more of Russian. Wool forms two-thirds of our own imports from Australia, and its annual proceeds are said to pay the interest on all the money she has borrowed from us, leaving a handsome balance over.

Australia has a younger competitor than Russia, who causes her far more anxiety, namely, the River Plate. It is the cloud, no bigger than a man's hand, that begins to darken the wool horizon. In geographical situation, in climate, and in access to market it is more nearly on a level with Australia than any other wool-growing country. Since its fever of revolution subsided all its industries have made great strides, and wool-growing among the rest. Six years ago the total importation of Plate wool into Europe was under a quarter million bales. Two years ago it had risen to 330,000 bales, and it is steadily growing at the rate of 10,000 or 15,000 bales a year. The annual production of the River Plate is now about one-third that of Australia and New Zealand. Of late years it has been advancing in quality even more than in quantity. Formerly it could not be used in this country except for common fabrics, but now it is coming to market with a clean, firm staple, and accordingly finds readier sale. The Cape and the East India clips are also improving in quality. The ill wind that has fallen on Australia is doing some good to her eager competitors, whose best wools are being taken to fill the place of her faulty clips. East India wool seems to have specially benefited from this cause, for East India sales, which were going on simultaneously with the late series in Coleman street, showed an advance of 10 to 15 per cent. on July rates. Australia has not been accustomed to contrasts of that sort, and they may be far from agreeable to her; but one unfortunate season need not, and will not, greatly discourage her. Droughts notwithstanding, she will still be the foremost wool-grower in the world, the most scientific, the most enterprising, the most progressive. Under fair conditions she will continue to supply us with the finest wool that can be produced, and to get for it the highest prices paid. Her present misfortune is due to a combination of most untoward but exceptional events. Chief among them is the drought, which may not recur, with the same severity at least, for another ten years. Next to that is the collapse of the continental market, which, to a certain extent, implies postponed and not altogether annihilated buying. As colonial wool has been the last of the great staples to succumb to depression, the same inherent vitality which sustained it through so many bad years is the strongest ground of hope for an early recovery.

Discussing the question to day with a merchant of this place, the view was advanced that perhaps one factor entering into and contributing to the present depression had been the change of fashion favoring the lighter and thinner fabrics as against those requiring more of the raw material for their manufacture. It seems, however, scarcely necessary to go so minutely into matters in the face of larger causes operating throughout the industrial world.

The intense stimulation to which all forms of material production have been submitted during comparatively recent periods, will, it would appear, sufficiently account for the excess of economical energy evoked with its accompanying results of disorganization and distress.

F. H. WIGFALL,

Consul.

UNITED STATES CONSULATE,
Leeds, March 17, 1886.

THE AUSTRALASIAN WOOL CLIP FOR 1885-1886.

REPORT BY CONSUL GRIFFIN, OF SYDNEY.

It is too early at the date of this report to furnish anything like a comprehensive account of the extent and character of the wool clip of the whole of the Australasian colonies for the season of 1885 and 1886. Large quantities of wool, however, have reached the various trade centers of the colonies for export, but in many of the southern districts the shearing operations have just been completed and sufficient time has not elapsed to enable the farmers to get their wool to market. The effects of the late drought have not been as disastrous as anticipated, and, to judge from the arrivals that have thus far reached Sydney, the quality of the clip, while not being up to its usual standard of excellence, is in much better condition than that of the previous season.

EXPORTS OF WOOL.

In the year 1815 the total wool clip of all the great island continent was only 150 bales, and now it is considerably over 1,000,000 bales. During the year 1885 1,094,000 bales were exported in addition to the quantity used by the woollen manufacturers in the colonies.

The following table shows the quantity of wool exported for each year from 1876 to 1885, inclusive :

Year.	Bales.	Year.	Bales.
1876.....	769,000	1881.....	957,000
1877.....	835,000	1882.....	993,000
1878.....	801,000	1883.....	1,054,000
1879.....	826,000	1884.....	1,112,000
1880.....	869,000	1885.....	1,094,000

The vitality of the industry can perhaps be best illustrated by the statement that notwithstanding the unprecedented drought which destroyed nearly 10,000,000 sheep in New South Wales and Queensland, the annual export from those colonies showed an increase instead of a decline. The quantity exported from New South Wales from the 28th of February, 1885, to the 28th of February, 1886, was 306,590 bales against 247,486 bales for the corresponding period of last year, showing a net increase for the year 1886 of 59,104 bales. The exports from Queensland increased from 52,904 bales in 1885 to 62,755 bales in 1886. The exports from Victoria declined from 301,214 bales in 1885 to 282,844 bales in 1886. West Australia increased her exports by 1,231 bales; Tasmania, 139 bales; and New Zealand by 22,700 bales. The exports from South Australia, however, declined from 144,158 bales in 1885 to 120,866 bales in 1886. The net increase for the whole of the Australasian colonies during the year ending February 28, 1886, was 51,365 bales.

The subjoined table shows the number of bales of wool shipped from the seven Australasian colonies in accordance with the latest returns

received to date, together with the net increase and decrease of each colony compared with the shipments for the year 1885:

Colony.	Date.	1886.	1885.	Increase.	Decrease.
		<i>Bales.</i>	<i>Bales.</i>	<i>Bales.</i>	<i>Bales.</i>
New South Wales	Feb. 28	306,590	247,486	59,104	.....
Queensland	Feb. 23	62,755	52,944	9,851	.....
Tasmania	Feb. 7	13,632	13,493	139	.....
West Australia	Feb. 5	14,343	13,112	1,231	.....
New Zealand	Jan. 31	150,100	127,400	22,700	.....
Victoria	Feb. 27	282,844	301,214	.....	18,370
South Australia	Feb. 26	120,866	144,158	.....	23,292
Total		951,130	899,767	.....	.....
Net increase				51,363	.....

Victoria heretofore has been the first in the list in the way of wool exports, a fact due (as I have frequently pointed out in former reports) to the shipment of New South Wales wool to Victoria from Riverina district. During the last decade the total increase in the production of wool in all the colonies has been at the rate of 47 per cent., but the decade previous, viz, from 1865 to 1875, was at the rate of 102 per cent.

MARKET FOR WOOL.

In 1875 the wool consumers of the world absorbed 442,000 bales more than they did in 1865, but in 1885 the world's consumption was only 415,000 bales more than in 1875. It is said that that a period will sooner or later be reached when the tendency of colonial wool to double itself every ten or every twenty years must be checked, by the inability of the world to absorb the ever-increasing supplies at remunerative profits. The present low prices of wool are cited as evidences that the period is near at hand, but it should be borne in mind that the price of wool was nearly as low in 1869 as at present, and that it rose again to as high figures as ever, and that the annual supplies steadily increased. The fact, however, that the Australasian farmers are reaching out for new markets for their wools in China and Japan, and are paying more attention than usual to American buyers, indicate that the colonists are apprehensive of a dull market in Europe. It is said that the proposition to increase the duties on wool in Germany has intensified their anxiety. The Australasian wools have been preferred by German manufacturers for the last quarter of a century to the wools grown in their own country. The Australian wool-grower is very much concerned on account of the vast quantities of wool now being poured into Europe from the River Plate country. These wools are not only increasing in quantity, but their quality is becoming better every year. The exports of the River Plate wool to Europe and the United States during the year 1885 amounted to 402,000 bales, against 360,000 for 1884, showing an increase of 37,000 bales for 1885. As the River Plate bale is a little more than twice the size of an Australian bale the total quantity of River Plate wool exported should be set down at about 850,000 bales.

IMPROVING THE FLEECE.

Many of the wool staplers here have had forwarded to them samples of the River Plate wool, with the view of comparing it with the Australian product. Some of these samples were exhibited at the great wool

warehouse of Mort & Co., of Sydney, and all the experts who examined them expressed great surprise, not only at the quality of the wool, but the manner in which it had been prepared for the market. The best of these samples, however, would not begin to compare with the wools grown in the Riverina district of Australia. The sheep farmers here, however, feel that they have a great danger to face, and will exert themselves to the utmost to have their wools better classed and selected than heretofore. It has been suggested that they should pay more attention to the quality of their wool and less attention to the quantity that they are able to produce. Amongst the methods recommended for improving the condition of the fleece is a severe system of culling. When the farmers remove from their flocks all inferior ewes, and adopt a better system of management, it is safe to assert that their margin of profit will be much larger than it is at present. Large numbers of sheep, which necessitate a heavy expenditure of capital, do not always give large net returns.

NEW SOUTH WALES WOOL.

It is believed that the bulk of the wool trade of Australia will at no distant date be concentrated at Sydney. The recent extensions of the Southern and Northwestern Railways have greatly improved the facilities of the farmers for getting their wool to market, and besides the shipping interests of Sydney are considerably larger than those of any port in Australasia.

Mr. H. W. Wright, of the New Zealand Loan and Mercantile Agency Company of this city, and to whom I am indebted for much of the material of this report, is of the opinion that manufacturers will find this season's clip to contain a larger percentage of "tops" and a smaller percentage of "noils" than the colonies have produced for several years.*

The early shipments of wool from the Liverpool Plains, Bligh, and Wellington districts exhibited greater depth and soundness of staple than those of last season, but the product, like that from the Darling and Lachlan districts, contained a large percentage of grass seed and clover, burr, &c., owing, no doubt, to the plentiful supply of rain over those districts in the early part of 1885. In wools from the Southern Riverina, where an excellent rainfall was also experienced, the staple shows that it has been well nurtured, being very bright, deep, sound, and elastic, although somewhat heavy in yolk. In the Central Riverina, which embraces the country lying to the north and south of the Murrumbidgee River, the wool presents what is called a "hungry" appearance, being not only tender and short in staple, but containing in many instances a large quantity of earth, sand, and burr. This was caused by the drought, which was so severe in that portion of the country as to necessitate the removal of the stock from their pastures.

The clip from New England, the Upper Hunter, and the Monaro districts was well grown, fine, and free from burr and sand, but contained perhaps a larger quantity of yolk than usual.

VICTORIA WOOL.

Although Victoria does not produce as much wool as New South Wales, and about 2,000,000 pounds less than New Zealand, nevertheless she has always occupied a front rank amongst the colonies as re-

* It is perhaps well enough to remark here, for the benefit of those not versed in the phraseology of woollen manufacturers, that the "tops" are the combed wools ready for spinning, and the "noils" the short and knotty pieces removed during the process of combing.

gards quality. Indeed, her wools are so celebrated for their fineness, luster, and length of staple that shippers from the adjacent colonies send their wool to Melbourne that it may be entered at the customs as Victoria produce, and bring a higher price than it otherwise would.

The Melbourne sales began this season on the 15th of October, and according to Mr. Edward Greville, a high authority on wool, the operations were confined to home dealers, the foreign buyers acting with considerable reserve. This apathy was of short duration, for a week later the sales at Geelong showed that competition ran very high, choice clips ranging from 12*d.* (24 cents) to 13*d.* (26 cents) per pound. From that time to the present date Mr. Greville states the American demand has been the chief feature in the market, and almost every lot suitable for the United States has found a purchaser. In all, 19,000 bales were purchased at Melbourne and Geelong by American buyers, forming a striking contrast to the sales during the corresponding period of last year. Most of the wools which did not come within the range of American competition were secured for Yorkshire (Germany and other continental countries taking the medium grade cross-breeds). All the scoured and washed wools were purchased for England. Lamb's wool, long in staple, bright in color, and free from burrs and seed, was purchased for American mills, at prices ranging from 11½*d.* (23 cents) to 14*d.* (28 cents) per pound. As regards the general condition of the clip, Mr. Greville thinks it should be classed below the average, although fairly good. The clips from the western districts were in excellent condition, being well grown and perfectly sound.

Before concluding this notice of Victoria wool I will mention, as a matter of interest to growers of choice clips, that some of Sir Samuel Wilson's well-known Victorian Ercildoune and Mount Bute wools sold in London on the 28th of January last at the extraordinary price of 5*s.* (\$1.10) per pound. In the catalogue of Messrs. Jacomb & Son & Co., published the day previously, appear sales of portions of the same clip ranging up to 50*d.* (\$1) per pound for washed fleece, 45*d.* (90 cents) per pound for lamb's, 25½*d.* (51 cents) for pieces, and 20*d.* (40 cents) for skirts.

SOUTH AUSTRALIAN WOOL.

Although South Australia has an area of 903,425 square miles, against 87,880 square miles for Victoria, nevertheless the larger colony does not produce anything like as much wool as the smaller one.

The name of South Australia is misleading to those who are not aware of its geographical position, and it has been suggested that it should be called Central Australia, inasmuch as nearly the whole of Victoria extends farther south than the former colony. Too much, however, cannot be said in favor of the adaptability of the soil and climate of South Australia for the production of wool. On the 31st of December, 1885, the number of her sheep was estimated at 6,699,406, against 10,637,412 for Victoria.

South Australia, like all the other colonies, has suffered greatly from continuous dry weather, extending over a period of four years. The effect has been a decrease in the clip for the present season, but notwithstanding the drought the greater part of the wool is said to be of superior quality. The colony has the advantage of immense areas of limestone, which, together with the skill brought to bear upon sheep-farming there, has developed a class of wool peculiar to that colony. It is a wool noted for its soundness, strength, and flexibility. The fleece is more open than the more dense clips of the best flocks of New South

Wales, Victoria, and Tasmania. There are those who affect to believe that the representative flocks of South Australia, as, for instance, the *Kanourie*, are not pure Australian merino, inasmuch as the fleece is much lighter and more open than that produced by any of the other colonies; nevertheless it is a grand healthy wool, and is coming more into favor in the British, German, and American markets. A considerable portion of this season's clip is heavy, both in earth and grease, occasioned by the characteristics of the country in which the wools were grown, but the bulk of them are strong in staple, boldly grown, and many of the most yolkly lots possess every essential quality of good combing wool.

Mr. Greville states that several thousand bales of this season's clip were bought by the American buyers who visited Adelaide, and that the competition for the kinds desired by them was brisk and well sustained. The Adelaide sales opened on the 6th of October. The prices at first ranged at very low figures, but later in the season an upward tendency was noticed, some lots of good, clean, shafty merino bringing as high as 10*d.* and 11*d.* (20 cents and 22 cents) per pound. The prices paid for cross breeds ranged from 5*d.* to 9*d.* (10 to 18 cents) per pound. Several lots of scoured wool brought from 16*d.* to 18*d.* (32 to 36 cents) per pound.

WEST AUSTRALIA WOOL.

This colony, like that of South Australia, covers a vast area, being the largest in the group, viz, 975,920 square miles. It is, however, thinly settled, its total population not being more than 32,000. The number of sheep in West Australia on the 1st of January last was estimated at 1,650,000.

The present clip is not only larger but in better condition than that of last season. It is said, however, that many years will elapse before the wool industry of West Australia will prove capable of any great expansion, for nearly the whole of the colony, with the exception of the spots which have been cleared for cultivation, is a vast unexplored forest, alternating here and there with immense wastes of sand. It has been proposed to introduce buffalo grass into the colony, with the view of gradually utilizing the sandy tracts.

QUEENSLAND WOOL.

Considerable quantities of Queensland wools find their outlet in Sydney. The sales for these wools, both here and at Brisbane, have been well attended, and fair returns were realized, especially for the better grades. The clip in many of the districts was fully equal to the celebrated clip of 1883-1884, which for weight, soundness, and condition of staple, has never been surpassed.

The want of rain in other districts affected the clip so injuriously that several of the leading brokers described it as the worst that had ever been brought to market. At the London sales in December and January, Queensland fleece described as *good to superior* brought from 1*s.* 2*d.* (26 cents) to 1*s.* 7*d.* (39 cents) per pound; fleece, inferior and bad condition, 7½*d.* (15 cents) to 1*s.* (24 cents) per pound; scoured, good to superior, 1*s.* 4*d.* (32 cents) to 1*s.* 10*d.* (44 cents) per pound; scoured lamb's, 1*s.* 2*d.* (28 cents) to 1*s.* 10*d.* (44 cents) per pound; greasy superior, 10*d.* (20 cents) to 11*d.* (22 cents) per pound; inferior to average, 5½*d.* (11 cents) to 7½*d.* (15 cents) per pound.

The number of sheep, notwithstanding the drought, is steadily increasing. The estimate for this year is 11,686,000, against 9,308,911 for 1885. The vast extent of country suitable for sheep-growing, together with the

suitability of the climate and the energy of the farmers, will in the near future place that colony in the front rank for the production of wool.

NEW ZEALAND WOOL.

New Zealand is the second wool-producing colony in Australasia. Her exports, however, are not as large as those of Victoria, for the reason that the products of other colonies, as explained in another part of this paper, find their outlet in Victoria; but nevertheless New Zealand grows more wool and carries a larger number of sheep than any other colony in the group except New South Wales.

The estimated number of sheep in New Zealand on January 1, 1886, was 15,686,310, against 14,056,266 for 1885.

New South Wales possesses nearly half as many sheep as the whole of the colonies put together. According to a statement of Mr. Alexander Bruce, the chief inspector of stock, the number of sheep in New South Wales on January 1, 1886, was 37,934,000. New Zealand wool is longer in staple than that of New South Wales, but it is generally heavier in yolk. The severe weather experienced in the northern part of the South Island of New Zealand affected seriously the condition of the clip in the more exposed districts, but the bulk of it was found to be in much better condition than expected. At Christchurch the season's supply was remarkably well grown, and much lighter in grease and freer from tick stains than at any other period in the history of the colony. The clip in the Auckland district is up to its usual standard, but the soil and climate of that district do not produce as good wool as that of the South Island. At Dunedin the clip of Otago, according to the March circular of the New Zealand Loan and Mercantile Agency Company, was reported to be in superb condition, both as regards quality and length of staple.

The New Zealand wools at the sales in London in January and February brought excellent prices, considering the depressed condition of the market, the high-class wools exciting very keen competition amongst continental buyers. The following are some of the results of the latest sales: F. and W. N., 104, at 10½d. (20½ cents) per pound; Rankawa, 96, at 10d. (20 cents) per pound; Pankawa, 148, at 9½d. (19 cents) per pound; Frimlay, 122, at 9½d. (19 cents) per pound.

In this connection I have thought to direct attention to the steadily increasing business of the New Zealand Loan and Mercantile Agency Company. This company, notwithstanding the unfavorable conditions of the market, handled during the present season 146,766 bales of wool, against 133,034 bales for the previous season. I am indebted to Mr. H. W. Wright for the following table, showing the number of bales handled by the company for each season since 1883:

Shipments and sales.	Quantity handled.					
	Year.	Bales.	Year.	Bales.	Year.	Bales.
SHIPMENTS.						
London.....	1883	72,721	1884	76,186	1885	82,131
SALES.						
In Melbourne.....	1883-'84	37,686	1884-'85	37,840	1885-'86	43,617
In Sydney.....	1883-'84	2,900	1884-'85	7,300	1885-'86	7,404
In Adelaide.....	1883-'84	.....	1884-'85	.....	1885-'86	8,900
In New Zealand.....	1883-'84	11,182	1884-'85	11,708	1885-'86	9,710
Total.....	.....	124,439	.....	133,034	.....	146,766

TASMANIAN WOOL.

During the last few years considerable quantities of the best known brands of Tasmanian wool have been shipped direct to London, instead of being sent to Melbourne, as heretofore. The wisdom of shipping direct to London is seriously questioned by those interested in the wool trade here, inasmuch as the Tasmanian wools offered at the Melbourne sales brought better prices than similar lots at the London sales. The Tasmanian clips that have thus far reached Melbourne are said by Mr. Wright to compare unfavorably with the average Tasmanian growth, being irregular, both in staple and condition. It was also noticed that the clips were badly skirted. This latter defect is unfortunate, especially when it could be easily remedied by the exercise of more care on the part of the farmers. Mr. Wright thinks that the inferiority of the Tasmanian clip had something to do with preventing the farmers from shipping their wool to Melbourne, as that market is used for the sale of their stud-sheep. The number of sheep in Tasmania, including those on the islands in Bass Straits, was estimated on the 1st of January last at 1,860,210, against 1,720,027 for 1885. The soil and climate of Tasmania are, however, better adapted for agriculture than for pastoral purposes. Sheep-farming there does not appear to have improved in the least since 1850, for the colony had at that time 1,822,320 sheep, nearly the same number as at present. Very few lots of Tasmanian wool were offered at London sales in January and February last, and the prices were unsatisfactory. The following are the latest quotations: greasy, T in circle 89, 9d. (18 cents) per pound. The scoured wools ranged from 9d. (18 cents) to 11½d. (23 cents) per pound. A recent circular issued by the New Zealand Loan and Mercantile Company, states that the practice of scouring wools is rapidly dying out in Australasia, the amount catalogued becoming less year by year. It is perhaps not generally known that washed wools meet with the attention only of English buyers and speculators. The American duties on this class of wools prevent their representatives from purchasing, and continental buyers prefer wools in the grease. Even if the American duties on scoured and washed wools should be modified, very great improvement would have to be made in the Australian method of washing and scouring before American buyers could be induced to touch them.

EXPORTS TO THE UNITED STATES.

An interesting feature in connection with the Australasian wool trade for this season, is the large increase in the number of bales shipped to the United States. In my special report on New South Wales wool, dated the 4th of November last, I directed attention to the fact that a larger number of Americans were then attending the wool sales than had been seen in the colonies for many years. These buyers were in constant attendance, not only at the sales held in Sidney, but in Melbourne, Geelong, Adelaide, and other places, and to their spirited operations are to be attributed more than to anything else the firmness of tone which has characterized the market ever since the commencement of the sales. Strong efforts have been made by the agents of the American houses to ship their wools direct to the United States. When this direct trade is firmly established the American manufacturer will be able to compete successfully with the products of the mills of France, Germany, and Belgium. In all, about 30,000 bales have been shipped to the United States, 10,000 bales going to San Francisco, and the remainder either

direct to the Atlantic ports or by way of London. The fine soft wools of Australasia are greatly desired by American manufacturers for mixing with the coarser grades grown in the United States. The wools of the two countries differ in so many essential particulars that the people here complain very bitterly of the import tax upon their products, inasmuch as the two industries cannot possibly interfere with one another. The Australasian merino is of a more regular and uniform quality than the American, and at the same time is finer, stronger, and more elastic, and of greater length of staple. The American merino not unfrequently displays a growth of *kemp*. This is a short, white hair, which is a source of great annoyance to manufacturers, as such fibers have no felting power and consequently occasion serious loss by weakening the yarn. These fibers are also of non-cellular structure, and, as they have no power of absorption, very naturally resist all kinds of dyes applied to them.

WOOLEN MANUFACTURES.

There has been little or no progress made by the woolen factories during the last seven or eight years, either in Victoria or New South Wales. The industry is conducted upon a larger scale in the former colony than in the latter, but if it has not actually retrograded, it is certain that it has not made any material progress.

In 1879 Victoria had nine mills in operation, which gave employment to 817 hands. In 1885 she had nine mills and 814 hands.

The subjoined table shows the condition of the mills in Victoria for each year from 1879 to 1885, inclusive :

Year ending March 31—	No. of woolen- mills.	No. of hands em- ployed.
1879	9	817
1880	10	814
1881	10	776
1882	9	768
1883	9	813
1884	7	694
1885	9	814

In 1879 New South Wales had eight woolen mills in operation, giving employment to 406 hands; in 1885 she had seven mills and 402 hands.

Victoria manufactures about 850,000 yards of cloth and tweed per annum, and New South Wales about 300,000 yards. The fact that labor is cheaper in Victoria than in New South Wales is perhaps one of the reasons why the industry is larger in the former colony than in the latter. An ad-valorem duty of 15 per cent. is charged on woolens imported into Victoria, but in New South Wales they are admitted free. A proposition has been made to double the duties in Victoria, but it may very well be questioned whether such a step would help the matter or not. The mills, it is said, stand more in need of skilled labor and improved machinery than of protective duties. The duty on woolens in Queensland is only 5 per cent. ad valorem, and yet the mills there show greater signs of progress than anywhere else in the colonies. Moreover, the annual value of imported woolens is increasing in Victoria and diminishing in Queensland.

The cloth manufactured in the latter colony is now preferred to the

imported article, and the Queensland tweeds which I have examined compare very favorably in color and texture with the products of some of the best-known European mills, and this is especially true of the tweeds made by the Queensland Woolen Manufacturing Company. The directors of that company stated at their semi-annual meeting, held at Ipswich on the 24th of January last, that their affairs were in a very prosperous condition, and that a dividend of 10 per cent. had been declared to the shareholders, besides reserving about \$4,000 for depreciation in stock. I learn from the report of the chairman that a clothing manufacturing branch has been established by the company with every prospect of success. About one hundred hands are employed by the company, and their wages amounted to \$25,000 per annum. The number of yards of tweed made during the half year was 26,092, against 28,000 for the previous half year. The report concludes with the following statement:

The retail branches of the company continue to do a satisfactory business, and in fulfillment of an intention expressed in the last report, your directors have made arrangements to open, in the course of a few weeks, a further branch at Toowoomba. This being the center of an important district, and where the demand for the company's tweeds is already considerable, there is every prospect of a good trade being done.

The population of Queensland is 300,000, and the value of their woolen imports is about \$350,000. The population of Victoria is very nearly 1,000,000, and the annual value of their woolen imports is \$5,000,000. The population of New South Wales is about the same as that of Victoria, but as no customs duties are levied on woolen imports, all kinds of piece goods are entered under the general head of drapery, and the value of such imports during the year 1885 was \$17,500,000, of which probably one-third represented the various kinds of woolens, the remainder being composed of silks, satins, velvets, and other dry goods. New South Wales far exceeds Victoria in imports and exports per head. In regard to imports, Victoria occupies only the fourth place amongst the colonies. According to the last report of H. H. Hayter, C. M. G., the government statist of that colony, Victoria, for a series of years, stood third in the case of imports per head and fourth in the case of exports per head, whilst in both cases New South Wales was at the head of the list. Tasmania stood at the bottom, as regards both imports and exports per head, over a series of years, and, as regards the former, in 1883 also; but, as regards exports per head, in the last three years New Zealand has stood below Tasmania.

G. W. GRIFFIN,
Consul.

UNITED STATES CONSULATE,
Sydney, N. S. W., March 6, 1886.

WOOLEN TRADE OF NORTHERN FRANCE.

REPORT OF CONSUL WILLIAMS, OF ROUEN.

Manufacturers have received generally larger orders than last season. The better quality of goods have been sought for and replace the imported cloths. It is difficult to ascertain the state of this trade with the United States, as a large proportion of the sales are made by merchants, and are not delivered directly from the mills. The direct shipments have slightly increased.

The following table, comprising the five great centers of the wool trade in the north

of France during the month of December, 1885, compared with the same month of 1884, indicates a slight tendency to a better state of affairs.

Place.	Combed wool.		Spun wool.	
	1884.	1885.	1884.	1885.
	<i>Francs.</i>	<i>Francs.</i>	<i>Francs.</i>	<i>Francs.</i>
Rheims	688, 159, 000	570, 340, 000	56, 460, 000	66, 456, 000
Roubaix	1, 489, 418, 000	1, 647, 246, 000	240, 727, 000	324, 092, 000
Tourcoing	1, 078, 503, 000	1, 344, 894, 000	176, 890, 000	185, 507, 000
Amiens	115, 775, 000	92, 290, 000	65, 462, 000	34, 140, 000
Fourmies	166, 359, 000	130, 331, 000	284, 643, 000	250, 640, 000
Total	3, 488, 214, 000	3, 785, 101, 000	824, 182, 000	840, 835, 000

At Rheims, combing has been very precarious during the last six months. The fall of 12 to 14 per cent. on single-fold merinos has been disastrous. The double-fold was no better, but its production was curtailed. On single cashmeres it has been the same, while the manufacture of double has been nearly abandoned. Flannels were fairly sustained until September; since then their production has been diminished, especially that of the hand-woven. The decline on these articles has been from 8 to 10 per cent.

THE NEW TEXTILE BÉRAUDINE.

This new textile, béraudine, invented by a workman at Maëstricht, named Béraud, and of which the French consul at Rotterdam gave recently a glowing official report, has been carefully examined by Professor Monchel, of Elbeuf.

From this report it appears that béraudine is not likely to supplant wool or even the poorest quality of the waste of wool or cotton. Its presence in a mixture of textile material increases the difficulty of spinning to such an extent that in no instance could béraudine be found spun finer than 4,000 meters to the kilogram.

The use of béraudine in fabrics of mixed threads diminishes its value by imparting roughness and harshness to the touch.

Thus it would appear evident that, although this textile may take a modest place hereafter, it is not at present calculated to diminish the price of wool.

This béraudine is claimed to be the direct product of certain peat grounds, and as such cheaper than any known raw textile material. This cheapness being excelled by its inferiority places the article low in the category of the world's textiles.

CHAS. P. WILLIAMS,
Consul.

UNITED STATES CONSULATE,
Rouen, France, February 3, 1886.

THE GOLD AND SILVER MINES OF HONDURAS.

Dispatch of Minister Hall, transmitting report of Vice-Consul Bernhard, &c.

I inclose a report of Vice-Consul George Bernhard on the gold and silver mines of Honduras.

The placer gold mines of Honduras, which have recently attracted so much attention in the United States, have been known a long time. They lie on both sides of the boundary line between that state and Guatemala, and have never been worked with much success in either. From the inclosed report it appears that they can be developed profitably by the hydraulic system only, which requires a large outlay of capital.

With reference to these placers, Mr. Bernhard says, "they are not so rich as represented", he also says that "experts have pronounced them equal to the best hydraulic washings of California, and that large investments of capital will meet with handsome profits."

This report, in so far as it relates to the immense mineral wealth of Honduras, the enormous production of the mines during the colonial period, and the new development that is about to be given them by American enterprise, intelligence, and skill, will, I am persuaded, be found of interest.

HENRY C. HALL,
Minister.

UNITED STATES LEGATION,
Guatemala, May 22, 1886.

REPORT OF VICE-CONSUL BERNHARD.

NATURE OF THE DEPOSITS.

The gold and silver mines of Honduras are divided into ten mineral districts having nearly two thousand known veins, beside which are the placer gold washings situated on what is known as the "North Coast," that is to say north of the Cordilleras, which, running east and west, divide the country into a north and south section.

I am aware that these placers are attracting great attention in the United States, but from the best information which I can get on the subject, are not as rich as represented.

The alluvial deposits forming the gold washings average about 30 feet in depth and cover hundreds of square miles, all of which is well watered and heavily timbered.

Experts who have examined the placer country, particularly in the department of Olancho, unite in pronouncing it equal to the best California hydraulic washings, and say that large investments of capital will meet with handsome profits. On the other hand, the earth is too poor to pay the pan-miner.

Gold quartz veins abound on the north and south coasts, while between them lies the great silver belt of the country.

This silver belt is over fifty miles in width and extends across the country from east to west.

The gold quartz veins yield mainly a refractory ore, and the silver ores are principally sulphurets and galenas.

HISTORY.

Most all the silver veins carry gold in paying quantities. Many of these veins attained great fame for their production of the precious metals when Honduras formed part of the viceroyalty of Guatemala.

Indeed Honduras then produced four-fifths of the mineral wealth extracted by Spain from Central America.

Many of the traditions of these would be incredible but for the corroborative proof furnished by the records in possession of the Government.

A case in point is the "Claro Rico" mine, located in the department of Choluteca, near the Pacific coast. This mine produced gold in such quantities that the Crown of Spain doubted the genuineness of the metal and appointed a royal commission to investigate, and in consequence a special royal treasurer was stationed at the mine to receive the "King's fifth," the tribute paid by all mines to the Crown of Spain.

The richness of another mine, the "Guayabillas," also known as the gambler's mine, in the mineral region of Yuscáran, department of Parí, once caused a great revolution.

It would not be difficult to cite twenty other instances of rich mines, in fact all the mineral districts contain a number of properties which have been remarkable for their production.

The records in support of the statements made of these mines date back to the last quarter of the seventeenth century and are in a remarkable state of preservation.

To search them, however, with any particular mine in view, is a work requiring considerable time as their care is divided between the general Government and the municipality of Tegucigalpa, and no successful effort has been made to classify them.

The two principal causes leading to the abandonment of the mines

since the independence of 1821 were the numerous revolutions and the robbing, under legal permission, the mines of their pillars. These pillars were in most instances very rich and afforded the native miner the readiest profit at the least outlay, but ultimately resulted in the complete ruination of the works.

By the native system of mining and reduction ore yielding less than sixty dollars a ton cannot be worked.

ENCOURAGING ENTERPRISE.

A few years ago the mining laws were amended by the adoption, with some modifications, of the Chilean mining code, and a vigorous effort was made by the Government to encourage the investment of foreign capital, and concessions of great value have been repeatedly granted to individuals proposing to organize companies to develop the mining industry of the country.

The only concession, however, which produced any great result was granted to a Mr. Thomas R. Lombard, of New York City, who organized what is known as the Central American Syndicate Company.

The great privileges possessed by this company have enabled it to secure what are considered the best mines in the country. Under its auspices nine companies have been organized in the State of New York, and are all developing their respective properties on a large scale.

Judging from the work already accomplished and that said to be contemplated, each of these companies are in possession of ample funds to carry them to success.

The companies have their headquarters in New York City and are known as the Santa Lucia Mining and Milling Company, the Rio Chiquito Company, Santa Elena Mining Company, Honduras Mining Company, Yuscáran Mining Company, Animas Mining Company, and the Pariso Reduction Company.

As the Government derives no revenue from the imports or exports of the mines, no data is kept of the bullion exportation.

The Government has greatly aided the mining industry within the past ten months by the building of a practical cart-road from the Pacific coast into the heart of the mining country. This is the only cart-road in Honduras.

MINING LAWS.

The mining laws are liberal, but, excepting in the case of the companies organized under the concession granted to Mr. Lombard, and now owned by the Central American Syndicate Company, titles to mines are not held in fee-simple.

Aliens enjoy the same rights as citizens in respect to mines and real estate, and the General Government is disposed to grant extra privileges to those who can influence the introduction of capital.

A mining claim is 250 varas long by from 100 to 200 varas wide, according to the dip of the vein.

A vara is between 32 and 33 inches long. More than one claim is allowed upon a vein.

The imports and exports on account of the mines are free.

■ Possession of mines is maintained for an indefinite term by the labor of four men. Natives engaged in mining can be exempt from military duty.

GEORGE BERNHARD,
Vice-Consul.

UNITED STATES CONSULATE,
Tegucigalpa, May 1, 1886.

Mr. Hall to Mr. McPherson.

UNITED STATES LEGATION IN CENTRAL AMERICA,
Guatemala, May 20, 1886.

SIR: I have received from the Department of State copies of your letter, dated the 12th ult., to the honorable Secretary, and one to myself of the same date, in which you ask for information concerning the mines and mining interests of Honduras.

Within the past week I have received a report on this subject from Mr. George Bernhard, an intelligent resident for many years of that State, and I have no doubt it will be found both interesting and trustworthy. I inclose a copy herewith.

I beg leave, however, to suggest to you, before making any definite arrangements, that two or more of your company should visit Honduras, and acquire the necessary information by actual observation and experience.

They should visit the capital, Tegucigalpa, which is most accessible from Amapala, the Pacific port of the country, and make their plans fully known to the Government, which I have no doubt will afford them all needed information and such assistance as it may be able to render.

The Hondurian Government manifests a great desire to give every protection to legitimate enterprises when undertaken by responsible parties with sufficient means to carry them out.

I am, &c.,

HENRY C. HALL.

ALEX. MCPHERSON, Esq.,
Bridgeport, Baker County, Oregon.

THE PETROLEUM WORKS OF AUSTRIA.

REPORT OF CONSUL-GENERAL JUSSEN, OF VIENNA.

The amendment of the tariff of Austria-Hungary, which has been the subject of a prolonged and not very harmonious discussion between the Austrian and Hungarian delegations (legislative committees), has been submitted by the Government to the Reichstag during the present week. Undoubtedly the amendments of the tariff, as agreed upon between the delegations of Austria and Hungary, will be passed and the proposed increase of import duty, which exceeds considerably the figures of the amendment as originally introduced, will assume the shape of law.* As soon as this tariff amendment is passed and published in full, I shall at once forward a translation of the same.

The change of the rates of duty on crude Russian petroleum, included in this amendment, will, I think, affect the interests of the producers of American crude petroleum very materially, and, without doubt, very beneficially.

THE QUESTION AT ISSUE.

In order to understand this question fully, a brief résumé of the respective views and action of the Austrian and of the Hungarian legislative committees and a statement of the causes of the conflicting interests of Austria and Hungary is indispensable.

Under the provisions of the Austro-Hungarian tariff now in force, the duty on crude petroleum of 8.30 degrees specific gravity or less, American as well as Russian, is 1 florin 10 kreutzers in gold, or 53 cents per 100 kilograms, equal to 221½ pounds English.

The Hungarians, who carry on an extensive petroleum refinery near Fiume, upon Hungarian territory, have taken advantage of this tariff by

* The following dispatch is pertinent to this report:

"VIENNA, June 18.—The Lower House of the Diet has fixed the duty on raw petroleum at 2 florins."

importing Russian petroleum, partly refined, under the head of crude petroleum.

Russian petroleum in its crude and *totally unrefined* state yields only about 27 per centum of petroleum, and the product of the refuse is of very little value, while the American crude petroleum yields 75 per centum of petroleum, and the remaining 25 per centum yields very valuable products, as benzine, paraffine, and other oils.

But the partially refined Russian petroleum imported by the Hungarians as crude yields 85 per centum when refined at Fiume. The Austrian Government, which, under the treaty between Austria and Hungary, is entitled to one-third of the import duties collected by Hungary, suffers a severe loss in its receipts of customs revenue by the action of the Hungarian custom-house officers, who pass this partially-refined Russian petroleum as crude at 1.10 florins per 100 kilograms, and for the purpose of remedying this abuse, or rather misconstruction of the tariff provisions, proposed a graduated scale of duties to be fixed in accordance with the quality and degree of refinement.

The Hungarians objected, and finally a compromise was arrived at by raising the duty on Russian partially-refined petroleum, such as is being imported now by the Hungarian refinery at Fiume, to 3 florins in gold per 100 kilograms, and the duty on American crude petroleum to 1.42 florins in gold per 100 kilograms. This change, however, although it is to be enacted as a law during the present session of the Reichsrath, is not to go into effect until the 1st day of December, 1887, and then to remain in force and effect for the term of ten years. In the meantime the Fiume refiners will suffer no loss in filling the contracts entered into under the present tariff.

AUSTRIAN VS. HUNGARIAN PETROLEUM INTERESTS.

Austria has not only suffered large losses in customs duties by means of the aforementioned misconstruction of the existing tariff on partly-refined Russian petroleum, but has also been compelled to pay a tax of 6.50 florins upon every 100 kilograms of petroleum manufactured at Fiume and consumed in Austria, and this tax, amounting, together with said loss on import duty, to several millions, has been appropriated by Hungary to its exclusive benefit. This tax of 6.50 florins per 100 kilograms is a consumption tax on refined petroleum, payable at the refinery before sale of the refined petroleum, and therefore an internal revenue of Hungary.

As to imported refined petroleum, the consumption tax is included in the import duty of 10 florins in gold imposed on every 100 kilograms of refined American and Russian petroleum. So that, while Austria prevented the importation of American refined petroleum to a great extent by this prohibitive duty of 10 florins, its subjects were compelled to purchase refined Fiume petroleum, on which they indirectly paid the tax of 6.50 florins, all of which, however, went into the coffers of Hungary. Austria thus failed to collect a large revenue from American refined petroleum, and had to empty its own pockets to enrich an industrial interest belonging exclusively to Hungary. A very radical change of this unfavorable condition of things is now proposed by the Austrian Government. The first step in this direction was the increase of the duty on partially refined Russian petroleum from 1.10 florin to 3 florins in gold per 100 kilograms. The next step will be the erection of a petroleum refinery near Trieste, upon Austrian territory and under Austrian supervision and protection, for the purpose of refining crude

American petroleum to supply the home demand of Austria. Thus the product of the Trieste refinery will be substituted for that of Fiume, and the consumption tax of 6.50 florins on petroleum used in the Empire will be collected for the benefit of Austria instead of the treasury of Hungary. This plan seems both feasible and just, and there can be no doubt that the Government is determined to carry it out.

AUSTRIAN WORKS PROPOSED.

I am credibly informed that the Austrian Government stands ready to extend important privileges to any syndicate which will undertake to erect and carry on this petroleum refinery at Trieste. These privileges to consist of the transfer of the ground needed for the refinery at a nominal rate, a full release from all internal taxes, and free importation of all machinery and material required for the refinery; the release from all taxes to be enjoyed for the period of twenty-five years. The venture is of course to be inaugurated and carried on as an exclusively Austrian industry, but I am assured that there will be no objection raised to the employment of foreign capital in connection with Austrian capital, and I have no doubt that an effort will be made to obtain skilled American labor, so as to produce if possible from crude American petroleum as good an article of refined petroleum as is at present furnished by the American refineries. That this cannot be done without the assistance of American experience and skill, Austrian business men familiar with the question are quite ready to admit. Whatever the consequences might be if this plan is successfully carried out with reference to the export trade in American refined petroleum to the Empire of Austria, there would seem to be no doubt that the export trade in crude American petroleum would be largely benefited. It is claimed, and it seems a very plausible claim, that if this refinery is built at Trieste, Russian petroleum will at once be driven out of the Austrian market, and that Trieste petroleum, refined out of crude American petroleum will take its place.

CONSUMPTION OF OIL.

The annual consumption of refined petroleum in Austria amounts to 1,600,000 meter centners, equal to 353,000,000 pounds or 44,200,000 gallons, or about 1,100,000 barrels. But a very small portion of this consumption is supplied by Galician petroleum, which is consumed mostly in Galicia, and is hardly sufficient in quantity to supply that market. So that it is quite safe to assert that if this Trieste refinery is built, the producers of American crude petroleum would in the near future be called upon to supply a demand for a quantity of crude petroleum, to be refined at Trieste, sufficient to cover the greater portion of this annual demand.

RUSSIAN REFINED COMPARED WITH AMERICAN REFINED PETROLEUM.

Prominent Austrian business men and capitalists who have already made application for the incorporation of the syndicate, which is to organize and carry on this new refinery near Trieste, and who have studied the petroleum question for years, are decidedly of the opinion that, as to illuminating qualities, Russian petroleum cannot be compared to American, and that even if the same machinery and the same skill were employed in refining Russian crude oil, the product would still be in-

ferior to the American refined petroleum. They intend to refine American petroleum exclusively at the refinery near Trieste, and are confident that they can manufacture a much better article than can possibly be produced out of Russian crude petroleum.

They do not fear the competition of the Russian product, and predict that it will be driven out of the market as soon as the American product, refined near Trieste, is ready for consumption.

I can state from actual observation and experience that, as far as the Austrian market is concerned, there is no kerosene to be found which is equal to the imported American refined, and that although the refiners of Fiume have experimented with a mixture of Russian and American petroleum, the result has fallen far short of the mark. And this is not only the result of my own observations and investigations but also the positive opinion of Austrian experts, who stand ready to back their convictions with their money in embarking in the contemplated venture near Trieste.

Aside from the superior illuminating qualities of the American petroleum, its profitable yield of benzine, paraffine, and other refuse products establish its great superiority over Russian and Galician oils.

The Galician crude petroleum yields but 35 per centum of illuminating oil of the poorest quality, the remaining 65 per cent. yielding lubricating oils of an inferior quality.

The Russian crude petroleum yields but a trifle more than 27 per cent. of illuminating oil, and out of the remaining 73 per cent. only a small portion of valuable refuse products can be produced.

The American crude oil, however, yields 75 per cent. of illuminating oil, and nearly the whole of the remaining 25 per cent. furnishes the raw material for very valuable products, viz, benzine, paraffine, &c.

This fact will, of course, be an additional inducement for the syndicate in question to refine none but American crude petroleum in the contemplated refinery near Trieste.

The amendment in question protects the sale and manufacture of these lubricating oils by raising the duty on the same from 1 florin 50 kreuzers to 5 florins per 100 kilograms.

THE GALICIAN PETROLEUM INDUSTRY.

The producers of Galician petroleum are clamoring for the paternal assistance of the Government. They ask for subsidies to build improved refineries, which will enable them to furnish a somewhat better article than the dangerous and smoky illuminating fluid which they are now compelled to place upon the market. It is not at all improbable that their prayer will be granted, especially since the present minister of finance sympathizes with his Polish countrymen, and is truly anxious to better their condition and further their industries. It is said that the concession to erect a refinery near Trieste under the favorable conditions and privileges hereinbefore mentioned will only be granted with the proviso that the Trieste syndicate shall also erect a refinery in Galicia.

In this way it is probably intended to alleviate indirectly the sufferings and misery of that class of Galician laborers who are employed in the petroleum district.

In calling attention to the lamentable condition of these Galician laborers, I wish to say distinctly that my impression is based entirely upon official reports, and not upon private communications, and that it must therefore necessarily be strictly true and wholly reliable.

THE MINERAL-OIL INDUSTRY IN BORYSLAW AND WOLUNKA, GALICIA.

This industry employs in all 8,223 laborers who are registered and about 4,000 unregistered laborers.

In Boryslaw and Wolunka about 11,000 laborers find employment in the petroleum mines. The petroleum is not raised to the surface by pumps, but is obtained in the same laborious manner as minerals. Shafts and pits are dug to reach it.

In Boryslaw and Wolunka about 1,350 of these shafts have been dug.

Though the new laws of Austria prescribe the necessary regulations to protect the life and health of the laborers, no attention is paid to these regulations by the proprietors of the mines.

Only three superintendents (*steigers*) are employed for the whole petroleum district, thus necessitating the superintendence of no less than 475 shafts by each superintendent.

It is, of course, impossible that under these circumstances the laws can be obeyed and the laborer properly cared for.

The proprietors manage things as it suits them, and at the least possible cost. These proprietors place the hiring and paying of laborers in the hands of cashiers, who have entire control over the laborers. The laborers are divided into two classes, those who are employed regularly and constantly, and those who work only at intervals.

The workmen of the first class are treated by these cashiers like cart-horses. The cashier boards and lodges them, and employs them. For the favor of this employment alone, the laborer pays the cashier a commission of 10 per cent. of his wages, which for 12 hours' work amount from 50 kreuzers to 1 florin. The balance of 90 per cent. of his earnings he is compelled to pay to the cashier or his wife, for board and lodging and drink. He is always in debt when the balance is struck, so that he neither has the means to clothe himself, nor to escape from this truly pitiful slavery.

These petroleum slaves, clad in miserable rags, may be seen in droves any day at Boryslaw, and the terrible fate of these men is really deplorable. They must work hard and drag along a miserable existence in spite of the not inconsiderable rates of wages,* while unconscionable speculators pocket the profits of their labor.

The laborers who are not permanently engaged are somewhat more independent from the cashiers.

At 6 o'clock in the morning and 6 o'clock in the evening, when the gangs of laborers change, hundreds of these workmen assemble in front of some drinking shop and form a sort of laborers' market, and are then hired for the ensuing twelve hours. As they do not trust the cashiers, they insist upon payment in advance, but, like the laborers permanently engaged, they are compelled to suffer a deduction of 10 per cent. payable to these cashiers for the favor of being hired, and the balance of their earnings generally goes into the pocket of the cashier and his wife for provisions and rum.

All these laborers are constantly suffering under this oppression; their food is poor, they are exposed to all sorts of dangers during the hours of labor, exposed as well to all sorts of disease, and their demoralization is general.

* The Austrian inspectors of industries believe the rate of wages, ranging from 50 kreuzers to 1 florin per day—20 to 40 cents—for twelve hours' hard labor, to be "not inconsiderable." This opinion characterizes sufficiently the condition of the laboring classes of Austria, compared with which the condition of the American laborer would seem to be a state of affluence and happiness.

In order to obtain a correct opinion of the physical and moral degradation of the laborers of Boryslaw, it is quite sufficient to cast a glance into one of the laboringmen's quarters, where in one narrow room sixty or seventy persons of both sexes, clad in filthy rags, are lying together so closely that they cannot turn from one side to the other.

They are not of one race, but a heterogeneous conglomeration collected from all countries, degraded beings who are not regarded nor treated as human beings, and for whose fate nobody seems to care. Whether a laborer breaks his neck, or dies miserably, matters not; there are always unfortunates who step into their places, and this seems to be regarded as the most important consideration. The laborer, like the draft animal, is only considered of value here while he retains the capacity to work.

The laborer who falls sick is to be commiserated most. He is left to his fate in the most cruel manner, and, as it is claimed, secretly transported beyond the Boryslaw territory, so that he may not become a burden to the proprietors of the petroleum mines.

Dr. Lechowsky, physician at the hospital in Dorhobycz, asserts that laborers smitten with disease have been brought to the hospital entirely naked.

In conclusion, I desire to repeat that this picture of the misery and degradation of the petroleum laborers of Galicia is not overdrawn, but that it is strictly true, and that all the facts above so glaringly set forth are taken *verbatim et literatim* from the official report of the Imperial Royal Austrian inspectors of industry for the year 1885.

My work as regards this picture of European slavery has been simply and solely the work of the translator.

EDMUND JUSSEN,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Vienna, May 7, 1886.

PETROLEUM DEPOSITS OF RUSSIA.

REPORT OF MINISTER OOX, OF CONSTANTINOPLE.

The magnitude of our interests invested in the petroleum trade generally, and especially in the Turkish Empire, led me to request of Mr. Libby a statement of his observations in the Caspian Sea.

Mr. Libby is the agent of certain oil companies or corporations in the United States. He went to Baku this winter, and under the keen light of American enterprise, he took a view of the situation.

In respect to the present and future competition of the Russian with the American trade, his narrative and deductions are of importance.

I inclose his statement. I have had many requests for information from our countrymen on this topic. I would suggest that you give his statements publicity.

When in Egypt, I was informed by the prime minister, Nubar Pasha, that his son, who is an engineer, was then on a visit to the scene of the recent discoveries of petroleum on the Red Sea coast.

The father of our consul at Alexandria, Sir Constantine Zerduvachi, also informed me that he was about to invest in the business if it had a favorable prospect. He is a rich and prudent man, and I asked

him to have his son, the consul, to write Consul-General Cardwell or to myself any mature and authentic information and views of the Egyptian "find."

Some doubts are expressed as to the value of the Egyptian discoveries. The first results are said to have been meager, further borings being required to confirm the speculations of the sanguine.

An article, which I inclose, appears in the Constantinople journal, the *Advertiser*, of April 2d, on this topic. It is suggestive of two things: (1) That oil exists in considerable abundance all over the neighborhood, where a colony is already forming, and (2) that it is accessible to that part of the coast where there is good anchorage.

I have made no copy of Mr. Libby's letter, as our copying facilities in the legation are not abundant.

S. S. COX,
Minister.

UNITED STATES LEGATION,
Constantinople, April 5, 1886.

CONSTANTINOPLE, *March 27, 1886.*

DEAR SIR: * * * The prehistoric sacred fires of Baku which for many and many a century have summoned the faithful from afar, appear at least to be losing their vitality, and to-day are appealing to practical utilization in the locality and are no longer more than an occasional magnet to attract the Pagan worshiper.

The petroleum fountains which some time ago awakened so much interest and wonder; the Balakhnain oil field so small, yet so prolific; the cluster of adjacent refineries constituting the black town of Baku; the tank steamers propelled by liquid fuel; the system of petroleum distribution in Russia; the illuminations of the oil on the surface of the untroubled waters of the Caspian have all been described so often and so accurately by far more fluent pens than mine that I may well confine myself to a few features of the present situation directly pertinent to competitive commerce.

The future of the Russian petroleum industry is principally contingent upon a continued large and economic production of the Balakhnain territory, increased transportation facilities, the extent of Government subsidy or support, and, finally, upon the hope of diminished production and higher prices in America.

EXTENT OF DEPOSIT.

Among the elements of its weakness is the very natural probability that when this circumscribed territory shall, in due time, diminish in productiveness or maintain its productive power at a greatly increased cost, that no *new* territory of corresponding value as to economic development and convenient location may be substituted.

To a far greater extent than in America does successful permanency depend upon an extremely low cost for the crude article.

With a yield of only about 30 per cent. of refined petroleum as compared with a yield of 70 to 75 per cent. from the American crude, there is remaining an enormous residual product, very little of which even now can be profitably marketed and very much of which cannot be marketed at all. Therefore, it becomes evident that each increase of cost in the Russian crude above its almost nominal valuation of to-day would be attended with a far greater added cost for the *refined* product than would result in America from a corresponding advance in the cost of the crude product there. While indications are not lacking that the cost of production in the Balakhnain territory is surely and steadily, even if very gradually, increasing, it appears none the less evident that for a long time to come this territory must hang like an unwelcome cloud over the hopes and dreams of the American producer, longing for the prices and the profits of the good old days. The majority of the refiners of Baku appear to be acting upon the theory that they have a sort of "demand call" on this territory for unlimited future supplies, and comparatively little surplus has therefore been accumulated *above* the ground.

The American industry, on the other hand, with the new developments constantly under way, with an enormous daily production and with a reserve stock of about thirty-five millions (35,000,000) of barrels, may reasonably hope that the future will not place them under less advantageous conditions of competition than of late.

TRANSPORTING RUSSIAN OIL.

The Russian refining interest at Baku has found itself embarrassed by inadequate railway transportation to the Black Sea, traceable not alone to insufficiency of tank

wagons, but to restricted possibility of transport over the Suramme Pass, about 3,100 feet above the level of the sea.

The Russian Government has long had under consideration methods of relief, halting between a decision in favor of a pipe-line connecting Baku with Batoum, a distance of more than 650 miles, or of constructing a tunnel under the Suramme Pass.

In declining up to the present time to give practical aid to what would at first be regarded as the simple solution of the two, the Russian Government has been doubtless influenced by the following considerations: That being the guarantor of the railway shares and debentures, it would be unwise to promote any parallel enterprise which would materially increase the annual deficit of the railway by taking from it its principal source of revenue. Again, the efficacy of a trunk pipe-line would be far more in doubt, its mission far more uncertain than in America.

The Russian Government were doubtless aware that to convey *both* the crude and refined product through the same pipe line would be impracticable. The objections to thus transporting the *crude* (as done in America) would be that all economic considerations would be shattered by paying expensive pipeage on a product of which about 70 per cent. may be classed as residual; and aside from the probable and continual clogging of the pipes, which the character of this crude product appears to suggest, the further obstacle is presented of necessitating the transfer of the refineries from Baku to Batoum, or the construction of entirely new ones at the latter place, naturally entailing an enormous expenditure.

On the other hand, if conveying the *refined* product is contemplated, the question of discoloration becomes most important, and, aside from this, it is evident that it would place the product of all the Baku refineries on the same footing. There could be no discrimination as to brand or comparative excellence or deficiency of refining, and even if some quality stipulation were nominally exacted, it would be almost impossible of enforcement, and the product of the larger and more reliable refineries would mingle at random with the product of the many smaller Tartar, Persian, and Armenian refiners, with their primitive machinery and dubious business methods, creating a medley of products unlikely to inspire confidence in the critical markets of the world. The conveyance of distillate (the article freed by distillation from the residual product, but not yet finished) is subject to almost the same objections, with the additional obstacle of compelling the refiners to have a *portion* of their factory at *each* terminal of the pipe line, say 650 miles or more apart.

While the doubtful utility of this pipe line might, therefore, cause either a government or private capitalists to hesitate before incurring the great cost of its construction, it is further evident that in a country where military considerations dwarf all others, and in a portion of that country growing daily in strategical and political importance, the Government would naturally reflect that while a tunnel might facilitate the meeting of some great military crisis, army maneuvering in a pipe line would be slightly complicated.

The advocates of the tunnel further urge that the pipe line would be built only in the hope of benefiting a single industry, while (military considerations aside) the tunnel would promote general commerce and conduce to the convenience of the public. The Government have had the question long under advisement, and a decision may be anticipated at an early day. It is a subject of great interest to the petroleum industry of Russia.

COUNTERFEITING AMERICAN BRANDS.

If imitation be indeed the sincerest form of flattery, our acknowledgments must be extended to our Russian friends. Not content with copying to the extent possible every detail of American package and packing, they have paid to the high reputation of one of the prominent American brands (Pratt's Radiant) a most embarrassing compliment. As I do not wish to use the word "counterfeiting," some more conservative synonym must be imagined.

From fair competition the American packer certainly does not shrink, but he certainly does object to see his signature at large when he has given no power of attorney.

In the effort about to be made to cause a discontinuance of these imitations which have damaged so unfairly some of the American brands, it is greatly to be hoped that the decrees of the proper tribunals may be of a character to vindicate the efficacy of trade-mark treaties, and I am sure the better element of the Russian industry should co-operate with us in these legitimate efforts. You are aware that we have not with Turkey as with Russia a trade-mark treaty, and the "regulations" covering this subject and claimed by the Ottoman Government to be equivalent in value to a treaty, present, I fear, a very dubious incentive to efforts for redress. If, however, we are successful in procuring a discontinuance of the imitations in the principal locality of their manufacture a valuable precedent will be established which may promote and simplify our efforts for protection elsewhere.

STORAGE PRIVILEGES IN TURKEY.

Referring to the storage petroleum monopoly at Constantinople, which from time to time has been the subject of official communication and protest from the representatives of the United States to the Turkish Government, it appears that no important concession has yet transpired, and the charges upon a case of petroleum stored for six months in Constantinople continue about *six times* as great as for an equal period in some of the neighboring ports. I am aware that the gentlemen controlling this monopoly have the right to exact these charges, so exorbitant, but the firman is optional, not compulsory, and I have personally no doubt they would find that policy ultimately the more profitable to themselves which should invite and not repel large deliveries to their cus ody. The importer to-day has no alternative but to employ his ingenuity in avoiding the delivery of one unnecessary package to the monopoly stores. A more conciliatory policy would in my judgment result quite as much to the pecuniary advantage of those enjoying this exclusive firman as to the convenience and economy of the importers. But in addition to extravagant storage and inadequate avenues for guarding our brands from imitation, I note the intention of the Ottoman Government to materially increase the import duty on petroleum. I am aware that the theory is advanced that doubling the duty will not diminish the consumption, and that as the added tax falls indirectly but surely on Turkish subjects, American interests cannot suffer. It is an almost invariable law of trade that consumption decreases as cost increases, and the expense of the American petroleum industry gathered from every country of the world certainly confirms such a statement as applicable to petroleum. In increasing this duty, Turkey is guarding or promoting no home industry, and the balance of her trade with the United States is already heavily against the latter. The firman which permits storages so exceptionally excessive I regard in conflict with the spirit, if not the letter, of our existing treaty as causing in substance an additional duty. Whatever the motive, this has been the result.

Petroleum is the first article of importance of United States exports to Turkey in Europe and in Asia. It is already taxed beyond the average import duties exacted by other countries, and far above the average exacted in *other* Oriental countries where consumption is so dependent upon cheapness. Its progress in Turkey is already harassed enough by the storage exactions and brand imitations before referred to, and should not, in my judgment, be singled out for a greatly-increased duty. I venture, therefore, on behalf of the American petroleum industry, to anticipate that no material increase will transpire without encountering your remonstrance.

QUESTION OF COST.

Reverting again to the broad question of American and Russian competition, I have noted the opinions of some of my predecessors to Baku that the economic domestic practices of the Tartar, Persian, and Armenian refiners would make them formidable competitors to the more extravagant American refiners. I cannot accept this view of the case. They have other characteristics that far more than neutralize any advantages that mere personal economies can create; devour *each other* in a retail sort of way they may, but if the Russian petroleum industry is to be permanently formidable and aggressive, it will, in my judgment, be traceable to the brains, genius, and perseverance of a comparatively small number of men who can command the support of the Russian Government and the confidence of the banking centers of Europe.

In the comparatively few markets of the world where Russian petroleum has as yet made important headway, it is generally conceded to be inferior and far more unreliable in quality and packing than the American product, and its introduction has been largely traceable to concessions in price or descriptions practiced upon the unwary consumer.

Russian progress, however, is naturally facilitated by the fact that there is scarcely a market on earth where it is necessary to explain the nature and utility of refined petroleum. That work has been done by others, and so far as the varied machinery attending production, refining, and packing is concerned, the petroleum industry of Russia has little to invent; it has merely to copy. But this has not been found an over easy task. Years of pioneer toil, enterprise, and ingenuity on the part of the American industry have culminated in perfect methods, extensive manufactories, sound business organization, and an enormous trade at home and abroad, and this fruition has been accompanied by the accumulation of great financial resources, which have been fairly won, and which no emergency has heretofore summoned into competitive action.

The Russian industry received a favoring stimulant from the action of its Government in placing a prohibitive tariff on the American product, but this nourishing influence has been greatly neutralized by the intense competition now in progress between the refiners of Baku for the supply of their home market, and if this industry

is to be rapidly developed for an aggressive export campaign it can hardly hope to escape the penalty which many a precedent suggests of paying high rates for money and high prices for credit.

I have made no effort in the foregoing to cross the technical, the statistical, or the descriptive frontier, nor have I regarded it as pertinent to venture upon any personal prophecy as to whether a great commercial duel between these two industries is forthcoming, or whether a commercial treaty of peace may later on be ratified.

To-day initial competition is in progress, and as the British Government is interested in guarding the manufactures of Manchester or bringing Indian cereals cheaply to the sea; as the Government of Russia is exhibiting an activity without a precedent (where its commerce is involved) in the development of what it conjectures may become the most important of that country's products, so the Government of the United States cannot be unmindful, and the petroleum industry gratefully recognizes and appreciates that it is *not* unmindful, of the welfare of the product standing first on the list of the manufactured exports of America—a product which has been so essentially and exclusively American, a product which has contributed so greatly to the favorable adjustment of American trade balances with the world, a product which has forced its way into more nooks and corners of civilized and uncivilized countries than any other one product in business history emanating from a single source.

If unfair commercial practices assail it, if diplomatic intrigue is busy against it, I am sure I only re-echo your own sentiments when I invoke the co-operation of the foreign representatives of our Government in its defense whenever and wherever its well-earned supremacy is unfairly menaced.

THE BAKU FIELDS.

I do not propose to inflict you with a recital of my journey from Constantinople to Baku. The storms which attended my voyage on the Black Sea could not wholly neutralize the scenic beauty of its shores. I must dedicate to wanderers of greater leisure and more descriptive power the task of picturing the weary desert which the Caspian Sea alone can end, the glories of the Caucasus, and the attractions of beautiful Tiflis.

The railway linking these two historic seas seems like a boundary line where the dash of the Occident and the repose of the Orient have blended together in many a conglomerate exhibition of custom, race, and costume, while this powerful and growing Russian nation, with eyes turned longingly to the South and to the East, are marching earnestly, silently, steadily onward to realize their dreams of conquest and territorial aggrandizement.

My visit to the enemy's camp (commercially speaking) was full of interest and instruction. It was signalized by many an act of considerate attention and courtesy, which, if I may not reciprocate hereafter, I shall at least long remember, as serving to evidence that, however personal interests may be clashing, "there's something good in human nature yet."

I am aware, sir, that this communication has conveyed but meager information in response to the inquiries with which you have honored me. It has been written amid the pressure of business avocation, but I cannot regard it as submitted wholly in vain, as its conclusion affords me so natural an opportunity of recording my appreciation of the interest you have manifested in my mission, and of the series of personal courtesies contributing so acceptably to my sojourn on Ottoman soil.

WM. K. LIBBY.

Mr. S. S. Cox,
Minister to Turkey.

PETROLEUM IN EGYPT.

[From the Constantinople Advertiser.]

The recent discovery of petroleum wells in Egypt comes at an opportune moment for the fortunes of the country, always supposing that the supply should turn out to be as plentiful as it is well situated. When the news first arrived here that oil had been "struck" near Suez, observed the Standard, some incredulity was, not unnaturally, expressed regarding the substantiality of the discovery. For some reason, probably because the great petroleum wells of America are for the most part in a carboniferous district, there is a popular notion that petroleum is intimately connected with coal.

In reality there is no necessary relationship between the mineral and liquid fuels. In Persia, China, Burmah, Baku, Galicia, and in various parts of Canada and the United States, not to mention the indications reported from Morocco, rock-oil occurs in all geological formations from Silurian up to Tertiary, and the two epochs of the earth's history with which it is most intimately connected are the Silurian and the lower half of the Tertiary systems, in which coal is either absent or very sparsely distributed.

The most productive region in the eastern hemisphere lies in the eocene and miocene of the Carpathians, Transylvania, and the Caucasus.

Two years ago M. Debay, a Belgian explorer, was sent to examine the neighborhood. For many months he had been more or less engaged in developing the wells at the cost of the Egyptian Government, and has now succeeded in establishing a little colony of workmen on the spot.

After penetrating through beds of sulphur, shale, clay, limestone, and sandstone, he "struck oil," and ascertained that it exists in considerable abundance all over the neighborhood. A single well yields two tons a day of the high specific gravity of 880, water being 1,000; and as the district is easily accessible from a part of the coast where there is a good anchorage, there is a fair prospect of a productive industry, which should not only make the navigation of the Red Sea more tolerable, but also improve the chances of a paying railway from the Red Sea coast to Cairo and to Berber. Fuel is power, but a self-stoking fuel in the torrid zone should be power combined with luxury.

RUSSIAN PETROLEUM.

REPORT OF CONSUL BISSINGER, OF BEIRUT.

Petroleum is the principal American product imported into this country, and it is therefore a matter of the greatest importance to the commerce of the United States that this market should not be lost to us through the foreign competition now seriously threatening it.

From reliable information I learn that for the last twenty years American petroleum has replaced olive oil, which had for generations past been the only liquid used for lighting purposes in this part of Turkey.

When petroleum was first introduced into this country the natives showed great reluctance against it, and even refused to give it a trial as a combustible matter, owing to a superstitious belief and fear amongst them that wherever petroleum was being used conflagrations would be sure to ensue.

By degrees, however, and after a short experience with it, its introduction became general and spread from Béirut to the interior towns and villages; and as it was soon found that the light produced by it was superior to that of olive oil and its cost even less, it rapidly became the favorite material for lighting in every household in the land.

For many years the "Pratt" oil proved to be the best in quality, &c., and consequently commanded the highest price in the market, "Central" and "Atlantic" ranking next in reputation and cost; but in the course of time these oils deteriorated somewhat in quality, and the petroleum known here under the name of "Pacific" came to the front and latterly has taken the place of the above-named marks.

From the following table it will be observed that the importation of American petroleum has undergone an ascending and descending movement during the last six years, both in quantity and value:

Year.	Quantity in cans.	Average value per can of two cans of 65 pounds.
1880.....	39,184	\$1 95
1881.....	154,490	1 82
1882.....	112,777	1 50
1883.....	220,816	1 58
1884.....	238,468	1 50
1885.....	151,848	1 32
Total.....	917,081	

* And 100 barrels, each weighing 330 pounds.

The price has, of course, fluctuated according to the amount of oil in the market.

RUSSIAN PETROLEUM.

On the 20th of April, 1885, the first cargo of Russian petroleum from the Baku wells was imported from Smyrna into Beirut by a German merchant, being an experimental shipment of but 200 cases; the price obtained for a case of two cans, weighing 65 pounds net, was 35 piasters, or \$1.25.

The petroleum received at this port from Russia during 1885 was not so well refined as the American, and consequently not so free from danger of explosion and unpleasant odors; but the last shipments received in Beirut proved to be of a far better quality, and, much as I regret the circumstance, I am forced to say that people here begin to give it the preference over its great American competitor.

In the course of last year 60,800 cases of Russian (Baku) oil were imported into Beirut, 10,800 cases of which were from the Alexandria and Smyrna markets and 50,000 cases direct from Batoum; the average wholesale price of the same did not exceed \$1.25 per case, or about 7 cents less than the American during 1885.

The actual average wholesale price of the different kinds of American petroleum quoted in this market up to February 15, 1886, is as follows:

Marks.	Price per case of two cans.
Pratt.....	\$1 22
Pacific.....	1 27
Central.....	1 20

while its Russian rival brought $3\frac{1}{2}$ piasters, or \$1.20, per case.

Although the entire importation of Russian petroleum amounted to only 60,800 cases during all of 1885 and up to February 15, 1886, it has grown to alarming dimensions since then, 45,000 cases having arrived here direct from Batoum within the past three weeks, 18,000 of which came by steamer on the 16th of February last, the first cargo ever shipped direct by steamer from Batoum to Beirut.

➤ The freight by sailing vessels from Batoum to this port is ten (10) cents per case of two cans (65 pounds weight), while it costs twenty-three (23) cents to bring the same quantity here from New York; quite a discrepancy in favor of Russia. The distance from Baku by rail to Batoum is about 700 kilometers, or about 475 miles, and the freight charges on oil are quite low, but the exact figures it has not been possible for me to obtain here.

In consequence of this severe Russian competition and the large stock of oil in the market, the price has now fallen to 33 piasters or \$1.18 for the Russian, with a still further downward tendency for both.

Since the 20th of April, 1885, the Russian petroleum imported into this market has been shipped in tin cases inside of wooden boxes, in exact imitation of the American, except that they bear different marks and addresses; there are at present two distinct Russian trade-marks in this market, *exact fac similes* of which follow:

THE BATOUM
NAPHTHA & TRADING
COMPANY



REFINED PETROLEUM
THE RED ANCHOR

N. B.—On the cases these letters and marks are all black.



B N I T O

N. B.—On the cases these letters are all black.



N. B.—On the boxes these letters are all black.

PALASHKOWSKY'S
CAUCASIANA
OIL
GUARANTY
PATENT CANS

N. B.—On the cases these letters are all black.

It is very evident that the Russians are making every effort to drive the Americans entirely out of this market, and unless the people in the United States interested in this business will furnish a superior article at a reduced price, I venture to predict that, in my opinion, the Russians will entirely control this market in less than two years time.

TRANSPORTING OIL.

The carrying charges and distances from the two productive centers are decidedly in favor of Russia, as has already been shown; for while the cost of transportation of a case of two tin cans of 65 pounds weight of American oil from New York to this port is 23 cents, it costs but 10 cents to deliver the same quantity of Russian oil from Batoum; the railway freight from Baku on the Caspian to Batoum on the Black Sea is 8 cents per pood (a pood is equal to 5 gallons), and is carried across in tank-cars, of which there is an immense number, while sailing vessels and steamers lie ready at Batoum to carry it to Mediterranean and other ports for distribution.

Tank-steamers, carrying the refined oil, are already plying on the Caspian Sea and on the river Volga, and have proven a great success, and I understand from good authority that orders for such steamers to supply also the Mediterranean ports are now placed with a large concern in Sweden, where most of this class of steamers have heretofore been constructed. The Russian railways are supplied with an enormous number of tank-cars, sufficient for the present demand across her borders to the center of Europe. Moreover, I learn now the Russian Government does not oppose the projected pipe-line from Baku to Batoum, but that nothing but the immense sums required, something like \$8,000,000, I understand, has so far prevented its construction.

PRICES AND PRODUCTION.

The price of refined oil varies from 17 to 19 copecks, equal to $8\frac{1}{2}$ to $9\frac{1}{2}$ cents per pood of five gallons in Baku, and from 15 to 16 cents in Batoum; these were the current market figures in January last, and I am aware of no change in the price since then.

The combined production of all the Russian wells in 1885 amounted to about 105,000,000 poods, or 525,000,000 gallons, crude, which at 42 gallons per barrel is equal to 12,500,000 barrels; of this quantity one firm alone, Nobel Brothers, controlled 39,000,000 of poods = 195,000,000 gallons. The fire test of their oil, when refined, is 26° to 27° by Abel Pensky's apparatus, and its specific gravity 0.822 to 0.823; they own 72 wells altogether, located in the Balhane square, 44 of which are producing, 16 drilling, 2 constructing, and 10 abandoned. The Batoum Petroleum Trading Company, called Palashkowsky, and the Baku Petroleum Company, are the next two largest concerns engaged in the oil business, the former of these two producing, in the year 1885, 43,942,720 gallons = 8,788,544 poods.

In addition to Balhane, wells are also located in Sabunche, Bay Bad, and Tazhief; in the Sabunche district operations only commenced in 1873.

Petroleum in Russia was first produced in 1832, seventeen years before Colonel Drake made his famous discoveries in Pennsylvania, if my memory serves me correctly, and the entire production of all the wells up to 1885 was 465,954,964 poods, or 2,329,774,820 gallons, equal to 55,470,830 barrels, while the total American production from 1859 to

1885 was 269,382,993 barrels, of which 2,635,696 were exported to Russia between the years 1864 and 1879.

The average depth of Russian oil wells was: From 1873 to 1878, 150 to 180 feet; in 1878, 258 feet; in 1879, 324 feet; in 1880, 336 feet; in 1881, 366; in 1882 and 1883, 414 feet; in 1884, 450 feet, and in 1885, 462 feet. The daily production of Nobel Brothers' wells, 42 in number, is as follows:

No.	Gallons.	No.	Gallons.	No.	Gallons.	No.	Gallons.
10.....	12,500	23.....	15,000	36.....	15,000	49.....	20,000
11.....	20,000	24.....	10,000	37.....	12,500	50.....	25,000
12.....	6,000	25.....	7,500	38.....	15,000	51.....	10,000
13.....	12,500	27.....	5,000	39.....	25,000	52.....	25,000
15.....	20,000	28.....	5,000	41.....	7,500	53.....	15,000
16.....	9,000	29.....	5,000	42.....	15,000	54.....	15,000
17.....	10,000	30.....	5,000	43.....	15,000	55.....	12,500
18.....	25,000	32.....	*50,000	44.....	15,000	56.....	12,500
19.....	12,500	33.....	12,500	45.....	12,500	57.....	12,500
20.....	20,000	34.....	15,000	48.....	25,000	58.....	20,000
22.....	20,000	35.....	15,000				

Or equal to 637,500 gallons daily.

* Fountain.

Average production of 42 wells in the Balhane district each day is:

Depth.	No.	Production.
<i>Feet.</i>		<i>Gallons.</i>
150 to 200.....	7	7,855
240 to 300.....	7	17,000
300 to 360.....	9	17,000
360 to 420.....	13	17,400
420 to 480.....	4	16,000
480 to 540.....	2	25,000

In Sabunche 19 wells produce daily, in gallons, as follows:

Depth.	No.	Production.
<i>Feet.</i>		<i>Gallons.</i>
300 to 360.....	8	15,435
360 to 420.....	8	14,685
480 to 540.....	2	22,500

Besides these, one well 378 feet deep flowed 200,000 gallons per day for one entire month.

In Shytan Bazar (Devil's market), which forms part of Sabunche square, 11 wells produce on an average daily in gallons:

Depth.	No.	Production.
<i>Feet.</i>		<i>Gallons.</i>
150 to 240.....	6	8,330
300 to 360.....	2	10,000
360 to 420.....	2	15,000
540 to 600.....	*1	60,000

* Flowing.

From these figures it would appear that the greatest flow is in a depth ranging from 300 to 420 feet.

In the Balhane district, where most of the oil is obtained, the strata of ground is as follows:

In 84 feet depth, partly clay with sand and stone; in 114 feet, stone and blue clay; in 120 feet, oil sand; in 126 feet, first stone, then clay and sand; in from 132 to 180 feet, oil sand; in from 186 to 300 feet in some boreholes, quicksand, in others clay and sandstone; in 306 feet, veins of oil sand, and lastly in from 318 to 450 feet oil sand only.

The entire number of boreholes or wells in the Russian oil fields is 582; of this number 138 wells were worked up to 1878, and since then 344 additional ones have sprung into existence.

List of exports of oil produce from Baku to Caspian seaports since 1873.

[In gallons.]

Years.	Crude oil.		Residue.		Refined oil.		Lubricat- ing oil— to Russia.
	To Russia.	To Persia.	To Russia.	To Persia.	To Russia.	To Persia.	
1873	693,960	104,950	2,650,125	13,500	4,143,820	20,150	.....
1874	1,156,010	357,675	2,464,705	5,250	6,596,580	84,780	.....
1875	1,165,470	453,785	5,637,175	31,450	9,804,600	145,605	5,385
1876	1,363,105	254,700	6,323,715	52,890	16,053,660	122,565	5,475
1877	3,311,415	78,500	10,071,345	123,150	22,890,670	83,160	.....
1878	1,386,465	20,650	16,624,515	292,250	31,057,645	221,905	1,580
1879	2,151,965	427,065	30,520,765	103,320	34,466,805	716,055	2,855
1880	1,417,295	387,050	32,055,395	266,050	48,930,300	260,835	139,425
1881	11,207,340	401,895	46,509,945	350,595	58,005,160	303,500	163,506
1882	6,250,500	250,000	89,417,445	450,000	62,002,500	350,000	1,587,355
1883	8,250,000	400,000	86,228,845	425,000	58,551,595	250,000	5,009,000
1884	8,772,580	460,000	138,906,070	550,000	88,653,210	375,000	4,578,730
1885	10,634,200	600,000	143,405,740	750,000	95,812,860	400,000	4,291,525

THE JEMSEH WELLS.

With reference to the discovery of petroleum on the Red Sea, I now inform the Department that I learn from what appears to be very good authority, that the "borings" at "Jemseh," on the Red Sea, by order of the Egyptian Government, have produced most satisfactory results to those interested.

The aggregate run of these experimental borings is said to be at the rate of 150 cubic meters in twenty-four hours, and according to "El Thram," a newspaper usually well informed in matters concerning the Government, is reported to be of very superior quality and to possess even more illuminating power than American petroleum.

ERHARD BISSINGER,
Consul.

UNITED STATES CONSULATE,
Beirut, April 23, 1886.

RUSSIAN PETROLEUM AT ANTWERP.

REPORT OF CONSUL STEUART, OF ANTWERP.

A steamer loaded with Russian petroleum in bulk, coming from Batoum, has arrived and discharged her cargo at the port of Antwerp. This is the first cargo of petroleum ever brought here in this manner by a steamer, and it is important as being a pioneer enterprise, and one which promises to be very successful, and to have a serious bearing upon the future of the petroleum carrying trade.

DIFFICULTY OF TRANSPORTING OIL.

The importers of Russian petroleum have always experienced great difficulty and expense in procuring suitable barrels for the transportation of their oil; they were compelled to purchase empty American barrels and send them to Batoum, where they were refilled and reshipped by steam to Antwerp. In addition to the heavy expense thus incurred, the barrels were often not properly repaired and glued at Batoum, so that a large percentage of the cargoes arrived here in bad condition and much loss was sustained from leakage, and from injury done to the oil from the glue which became detached from the barrels.

In order to remedy these inconveniences Messrs. Nobel Brothers, the great refiners of Russian petroleum, have made the experiment of sending their oil in bulk to this port in a steamer built after the manner of those in use by them for the same purpose for shorter voyages nearer home, and it has proven successful, so much so that a number of new steamers are now being constructed expressly for this carrying trade.

The steamer Ferguson, used by them on this occasion, is an old English steamer, altered and fitted with a number of tanks, with a capacity of about 12,000 barrels, and she is expected to make five or six voyages during the year.

For the reception of the oil thus imported the same firm, through their agents here, have had constructed at the Kattendyck Basin two large reservoirs capable of holding about 14,000 barrels, and so situated that the oil can be transferred by a pipe from the steamer thereto; they have also erected an establishment with the best facilities for the repairing and handling of barrels, and for filling them from the tanks. Being also directly connected with the railways, the oil can be easily run from the reservoirs into tank-cars, or the barrels can be loaded upon freight cars with but slight trouble and expense.

The economy of this system, by which the expense of the barrels is avoided, the space heretofore occupied by barrels given to the oil, and the delay and expense of loading and unloading reduced to a minimum, is apparent, and everything that tends to lessen the expense of transportation will, in the same degree, increase the quantity of Russian petroleum imports, that same expense being the only drawback.

RUSSIAN COMPETITION WITH AMERICA.

There is no doubt that Russian petroleum will prove a serious competitor of the American article wherever it can be introduced in sufficient quantities and upon equal terms. This competition is now felt in all markets adjacent to the places of production, and in some of the ports of the Mediterranean; but no apprehension need be felt of any serious interference with our product upon this or any of the northern markets, at least for a long time to come.

The Russian petroleum is offered at a slight figure below the American; but this is done, I am sure, at a loss in order to introduce it and overcome the preference that is felt for the American oil.

A serious drawback to the Russian petroleum is that it cannot be sold for future delivery; the receipts are too small, irregular, and uncertain to allow such contracts to be made, and as the bulk of sales are made in this manner, it cannot offer any competition with the American article, which can be delivered at any time and in any quantity to suit purchasers.

The receipt of American petroleum for 1885 was 850,000 barrels, a quantity below the average yearly receipt.

The receipt of Russian oil for the same time was 11,650 barrels only, of which quantity the Belgian Government took about 6,000 for use in their railway stations.

JOHN H. STEUART,
Consul.

UNITED STATES CONSULATE,
Antwerp, March 18, 1886.

RUSSIAN MINERAL LUBRICATING OIL AND PETROLEUM IN GERMANY.

REPORT OF CONSUL WAMER, OF COLOGNE.

It is a fact sufficiently well known that the American lubricating oil is being gradually driven out of this market by the Russian lubricating oil, and at present a strong and, so far, not altogether unsuccessful effort made to supersede American petroleum by Russian petroleum.

As such a competition seriously affects an important branch of American commerce, it will be instructive to investigate the causes which have led to this preference in favor of Russian petroleum.

The so-called American mineral lubricating oil was first introduced into this section from the Paris Exhibition of 1867.

The Koln-Mindener Railway, now owned by the Government, made the first experiments in the autumn of the same year with this oil, which was subsequently imported from America under the name of "vulcan oil."

The result of these experiments was such as to induce this company to use this oil largely. Generally speaking, this oil gave much satisfaction until its quality failed to come up to its required standard.

Its resistance to melt increased to such an extent that even at a temperature of $+25^{\circ}$ Celsius it ceased to remain liquid.

THE RUSSIAN OIL.

Besides the American lubricating oil, a similar oil is imported from Russia. The latter came from Baku, on the Caspian Sea, was forwarded from Astrachan up the Volga, and after being refined at Moscow, Riga, and Petersburg, found its way here, partly by sea and partly by rail.

It will be readily seen that the transit from Russia is rather a long and round about way, and when it is further considered that the Volga, the canals, and the Baltic Sea are open only for about five months in the year, it cannot be doubted that the American lubricating oil may still compete with the Russian.

It cannot be denied that the Russian lubricating oil possesses some advantages over the American, and the chief advantage is, as I am reliably informed, that the Russian oil remains in a liquid form at lower temperatures, for which reason the Russian oil is better adapted for use in winter.

On the other hand, the American oil has its advantages over the Russian inasmuch as it is specifically lighter, and is preferred as a cylinder-oil for heavy machines. The consumption of mineral lubri-

cating oil has increased with every year in this part of Germany, and is extensively used now by all railways.

A chemist of one of the leading railway companies here informs me that he stipulates the following conditions in accepting deliveries of mineral lubricating-oils:

- (1) Specific gravity 0.875 to 0.925, at 15° Celsius.
- (2) In pouring the oil on a glass plate, it must run off clear and be free of sediments.
- (3) It must be pure mineral oil.
- (4) Burning temperature, 150° Celsius.
- (4) Freezing point, from November to end of February, 10° Celsius; otherwise, +0° Celsius.
- (6) The resistance to melt at 15° Celsius must be two to three times stronger than in the case of rape oil.

MARKETING RUSSIAN OIL.

In the beginning I referred to the effort that is being made to replace American petroleum by Russian petroleum.

The firm of Messrs. Nobel, by their untiring efforts have so far left nothing undone to introduce Russian petroleum into the European market. It is known that this firm endeavored to obtain permission from the Russian Government to build a water-conduit from Baku to Batum on the Black Sea, but the application was refused.

Since then all possible means have been resorted to for the purpose of overcoming the transport difficulties, and of reducing the freight to such a cheap rate as to enable the firm to oust the American petroleum from the European market.

For some time the transport by land was made by means of cylinder wagons, and now the experiment has been made of sending petroleum by sea in "tank" steamers.

A steamer of this description, the Ferguson, laden with Russian oil, arrived in the middle of last month for the first time at the port of Antwerp.

As this is not only an event of considerable importance, but perhaps also the prelude to a great change in the petroleum trade, the following particulars of this first shipment by sea may be of some value to those interested in the American petroleum trade.

Messrs. Rieth & Co., the agents and consignees of Messrs. Nobel, have erected at the port of Antwerp two large tanks, capable of holding 1,800 tons. The petroleum is pumped automatically out of the ship into these tanks, and is afterwards repumped into other cylinders for further transportation.

An automatic weighing machine has been constructed by Munnern, of Cologne, which gives the weight of the cargo. The steamer Ferguson, which brought the first shipment, had 38 tanks, 32 of which were filled. The remaining 6 were left empty as reserves in case of an expansion of the petroleum, caused by an increase in the temperature. The steamer is expressly built and fitted out for the transport of petroleum in tanks, and can carry 1,700 tons, equal to 12,000 barrels of petroleum, otherwise the steamer could only carry 7,000 barrels. By means of a steam-pump, constructed by Ludwig Nobel, the steamer is unloaded in twenty-four hours and reloaded in thirty-six hours.

The arrival of this steamer, with this new system of tanks, was made the occasion of a small celebration, at which the burgomaster of Antwerp, several notabilities of the Antwerp trade, and representatives of the press were present. Mr. Rieth addressed his friends in a short

speech, to which the burgomaster replied, and expressed the hope that the new undertaking might benefit Antwerp trade.

Without wishing to indulge in any criticism on the remarks made by the burgomaster, it does not seem to me that the trade in Antwerp will be any more benefited by the importation of petroleum from Russia than it would from America, because, if the petroleum trade is taken away from America, there is no evidence to show that there will be any material increase in the petroleum business.

In a pamphlet brought out by Dr. Charles Augenot, who has made petroleum a special study, it is stated that Russian petroleum burns very well in all lamps of which the receivers are not too deep, and that the illuminating power of Russian petroleum surpasses that of the best American petroleum.

WM. D. WAMER,
Consul.

UNITED STATES CONSULATE,
Cologne, March 31, 1886.

TARIFF LEGISLATION OF CANADA.

Consul Patch transmits the following tariff legislation of the Dominion of Canada, taking effect March 30, 1886:

Resolved, That it is expedient to provide that the following rates of duty shall be assessed and collected on each of the articles hereafter named on and after the 30th March, 1886, and to repeal all acts or parts of acts now in force, in so far as they provide for assessing and collecting any different rates of duty than the rates hereby provided or which are inconsistent therewith:

Almonds, shelled: A specific duty of 5 cents per pound.

Almonds, not shelled, and nuts of all kinds not elsewhere specified: Specific duty of 3 cents per pound.

Baking powder: A specific duty of 6 cents per pound (present duty, 20 per cent.).

Boxes, cases, and writing desks, fancy and ornamental, and fancy manufactures of bone, shell, horn, and ivory; also, dolls and toys of all kinds and materials, ornaments of alabaster, spar, terra-cotta, or composition, statuettes, beads, and bead ornaments: Thirty per cent. ad valorem (present duty, 20 to 30 per cent.).

Belts, nuts, washers, and rivets of iron or steel: A specific duty of 1 per cent. per pound and 15 per cent. ad valorem (present duty, 30 per cent.).

Bluing, laundry bluing of all kinds: Twenty-five per cent. ad valorem (present duty, 20 per cent.).

Cider: A specific duty of 10 cents per imperial gallon (present duty, 20 per cent.).

Cordage, manila and sisal cordage, of all kinds: A specific duty of 1½ cents per pound, and 10 per cent. ad valorem (present duty, 20 per cent.).

Desiccated cocoa-nut, sweetened or not: A specific duty of 6 cents per pound (present duty, 1 cent and 35 per cent. when sweetened, and 20 per cent. when not sweetened).

Feathers, ostrich and vulture, undressed: Twenty per cent. ad valorem (present duty, 15 per cent.).

Feathers, ostrich and vulture, dressed: Thirty per cent. ad valorem (present duty, 25 per cent.).

Fruits, dried, viz, raisins: A specific duty of 1 cent per pound and 10 per cent. ad valorem (present duty, 20 per cent.).

Fruits, dried, viz, currants, dates, figs, prunes, and all other dried fruits not elsewhere specified: A specific duty of 1 cent per pound (present duty, 20 per cent.).

Fruits, green, viz, blackberries, gooseberries, raspberries, and strawberries: A specific duty of 4 cents per pound, the weight of the package to be included in the weight for duty (present duty, 2 cents per quart).

Peaches: A specific duty of 1 cent per pound, the weight of the package to be included in the weight for duty (present duty 40 cents per bushel.)

Glumps, cords, braids, ribbons, and binding when imported by hat manufacturers for use in their factories: Fifteen per cent. ad valorem (present duty 30 per cent.).

Gas, water, and soil pipes of cast iron: Thirty per cent. ad valorem (present duty 25 per cent.).

Gloves and mits of all kinds: Thirty per cent. ad valorem (present duty 25 per cent.).

Hair-cloth of all kinds: Thirty per cent. ad valorem (present duty 20 to 30 per cent.).

Harness and saddlery of every description and parts of the same: Thirty per cent. ad valorem (present duty 25 per cent.).

Laces, braids, fringes, embroideries, cords, tassels, and bracelets, also braids, chains, or cords of hair: Thirty per cent ad valorem.

Lead pipe and lead shot: A specific duty of $1\frac{1}{2}$ cent. per pound (present duty 30 per cent.).

Oleomargarine, butterine, or other substitute for butter: A specific duty of 10 cents per pound (not in old list). Excise 8 cents per pound when manufactured in Canada.

Printed or dyed cotton fabrics not elsewhere specified: Twenty-seven and a half per cent. ad valorem. (The present duty on printed or dyed cottons n. e. s. is $27\frac{1}{2}$ per cent.).

Spirits, strong waters, not having been sweetened or mixed with any articles, so that the degree of strength thereof cannot be ascertained by Sykes's hydrometer: For every imperial gallon of the strength of proof of such hydrometer, and so in proportion for any greater or less strength than the strength of proof, and for every greater or less quantity than a gallon, viz: Geneva gin, rum, whisky, alcohol, or spirits of wine and unenumerated, unmixed and not sweetened spirits, by whatever name called, a specific duty of \$1.75 per imperial gallon (no change).

Old Tom gin: A specific duty of \$1.90 per imperial gallon (present duty $1.32\frac{1}{2}$ in bulk).

Spirits and strong waters, mixed with any ingredient or ingredients, and although thereby coming under the denomination of proprietary medicines, tinctures, essences, extracts, or any other denomination, including medicinal elixirs and fluid extracts, whether in bulk or bottles, not elsewhere specified, shall be nevertheless deemed to be spirits or strong waters and subject to duty as such: A specific duty of \$2 per imperial gallon and 30 per cent. ad valorem (present duty \$1.90 and 20 per cent.).

Cologne water and perfumed spirits in bottles or flasks not weighing more than four ounces each: Fifty per cent. ad valorem (present duty 40 per cent.).

Cologne water and perfumed spirits in bottles, flasks, or other packages weighing more than four ounces each: A specific duty of \$2 per imperial gallon and 40 per cent. ad valorem (present duty \$1.90 and 20 per cent.).

On sugar, melado, concentrated melado, concentrated cane juice, concentrated molasses, concentrated beet-root juice, and concrete, when imported direct from the country of growth and production, for refining purposes only, not over No. 13 Dutch standard in color, and not testing over 70 degrees by the polariscope: A specific duty of 1 cent per pound, and for every additional degree or fraction of a degree shown by polariscope test, $3\frac{1}{2}$ cents per 100 pounds additional (new classification; polariscope introduced for the first time).

On sugar, not for refining purposes, not over 13 Dutch standard in color, when imported direct from the country of growth and production: A specific duty of 1 cent per pound and 30 per cent. ad valorem on the value thereof free on board at the last port of shipment (present standard 14 D. S. duty 1 cent and $32\frac{1}{2}$ p. c.).

On all sugars above No. 13 Dutch standard in color, and on refined sugar of all kinds, grades, or standards: One and one-half cents per pound, or 35 per cent. ad valorem on the value thereof free on board at the last port of shipment (present duty 1 cent and $32\frac{1}{2}$ per cent.).

On all sugars not imported direct without transshipment from the country of growth and production there shall be levied and collected an additional duty of $7\frac{1}{2}$ per cent. of the whole duty so otherwise payable thereon (present discrimination $2\frac{1}{2}$ per cent. on value.)

[Provided that when any cargo of sugar for refining purposes is found to grade, to the extent of not over 15 per cent. of the whole, above No. 13 Dutch standard in color, the whole of said cargo may be admitted to entry by polariscope test as above provided, for refining purposes only.]

Sirups—cane juice, refined sirup, sugar-house sirup or sugar-house molasses or sorghum (whether imported or not)—a specific duty of 1 cent. per pound and 30 per cent. ad valorem (present duty $\frac{1}{2}$ cent per pound and 80 per cent.).

Molasses—other, when imported direct, without transshipment, from the country of growth and production—15 per cent. ad valorem. (No change.)

Molasses when not so imported 20 per cent. ad valorem. (No change.)

[The value upon which the ad valorem duty shall be levied and collected upon all the above-named sirups and molasses shall be the value thereof free on board at the last port of shipment, provided that molasses when imported for or received into any refinery or sugar factory, or to be used for any other purpose than actual consumption

shall be subject to and there shall be levied and collected thereon an additional duty of 5 cents per imperial gallon (new proviso), provided that the change in the rates of duty on sugar and molasses shall apply only to importations arriving in Canada on and after the 31st day of March instant, and not to such articles warehoused prior to that date.]

Sugar candy, brown or white, and confectionery: A specific duty of $1\frac{1}{2}$ cents per pound and 35 per cent. ad valorem (present 1 cent and 35 per cent.).

Wire fencing, buckthorn, strips, and other similar fencing wire of iron or steel: A specific duty of $1\frac{1}{2}$ cents per pound (changed from ad valorem).

Yeast cakes and compressed yeast in packages or bulk of 1 pound and over: A specific duty of 6 cents per pound.

Yeast cakes in packages of less than 1 pound: A specific duty of 8 cents per pound (present duty 20 per cent.).

Tubing, wrought iron, plain, 2 inches in diameter or under, coupled and threaded or not: Thirty per cent. ad valorem (present duty 25 per cent.).

Whips of all kinds: Thirty per cent. ad valorem (present duty 25).

Wire, iron or steel, galvanized or not, 15 gauge and coarser: Twenty per cent. ad valorem (present duty 15 per cent.).

Portland and Roman cement to be classed with all other cement at specific rates now in force.

Resolved, That it is expedient to amend schedule B, being the list of goods which are entitled to entry free of duty when imported to Canada, by substituting the following provisions for the corresponding items now contained therein:

Articles for the personal use of consuls-general who are natives or citizens of the country they represent, and who are not engaged in any other business or profession.

Borax, in lump.

Grease, the refuse of animal fat.

Iron and steel, old and scrap (but nothing shall be deemed scrap iron or steel except waste or refuse iron or steel that has been in actual use and fit only to be remanufactured).

Sumac, crude.

Resolved, That it is expedient to strike out the following articles from the list of goods which may be entered free of duty when imported into Canada, viz: "Iron, sand or globules, and dry putty for polishing granite," "ottar of roses," "philosophical instruments and apparatus including globes, &c."

Resolved, That it is expedient to amend schedule D, relating to prohibited articles, by striking out the items relating to copyright works and substituting the following in lieu thereof, viz: "Reprints of Canadian copyright works, and reprints of British copyright works, which have been also copyrighted in Canada."

Resolved, That it is expedient to provide that an excise duty of 8 cents per pound be levied and collected on all oleomargine, butterine, or other substitute for butter manufactured in Canada.

EXPOSITION OF AMERICAN MACHINERY IN CHILI.

REPORT OF MINISTER ROBERTS, OF CHILI.

CONCESSION TO AMERICAN EXHIBITORS.

An exposition for the display of American machinery had been decided on in the latter part of 1884, and a circular issued under instruction of the Government by its representatives in the United States.

From that circular I learned that \$25 in gold had to be paid to the Chilean consul in Boston for every cubic meter of goods shipped to the exposition.

This, of course, would amount to practical prohibition of our bulky farming machinery, the very articles the exhibition was chiefly intended to display. I at once called upon the minister of foreign relations and President Santa Maria, and showed that while the amount received would be so small as to be hardly worth the consideration of the Government, it nevertheless would be a very heavy additional tax upon those desiring to exhibit, who had freight and other charges to pay,

and that it would be the cause of the utter failure of the exhibition, and hence would reflect very unfairly upon our skill and enterprise as a manufacturing nation; that as it was, owing to causes that I could not then explain, I feared the display of our manufacturers would afford a very inadequate idea of their extent and of our resources.

To these representations the President and minister gave a very patient and friendly hearing, and assured me they would examine into the matter very thoroughly, the minister saying, what was perfectly true, that as he had only lately taken office he knew nothing about the matter until I brought it to his attention.

I left both, however, satisfied that my request would be granted and the fees abolished. In a few weeks after I learned from the minister that the President had so decided, and would in a short time issue a decree, with regulations for the admission of American machinery to the exposition, which was done. After the decree was promulgated I learned that the representatives of European governments applied for similar privileges for their manufacturers, and were told that this was exclusively an American exhibition, and as such it would be maintained.

OPENING OF THE EXPOSITION.

The opening ceremonies did not take place until the 25th of March, owing to the labor and time necessary to arrange the machinery, and the delay in the arrival of some of the exhibits which came by sailing vessels.

The building, which is located in the "Quinta Normal," the most beautiful pleasure-grounds in Chili, is about 200 feet wide by 500 feet long, and was erected some years ago by the Government for the purposes of expositions.

The display, while very far from what it should be, is nevertheless the best of our manufactures that has ever been exhibited on this coast, and will undoubtedly lead to an increased business in many of the goods exhibited. I learn that orders are being constantly received by the agent of the manufacturers here.

DURATION OF THE EXHIBITION.

The exposition will be kept open for one year. It was originally intended to continue from January to January, but I have little doubt the year will count from the 25th of March. In the meantime goods will be received for exhibition during the year.

WILLIAM R. ROBERTS,
Minister.

UNITED STATES LEGATION,
Santiago, April 26, 1886.

Address of Señor Ramon Barros Luco, at the opening of the exposition of machinery at Santiago, on Thursday, March 25, 1886.

GENTLEMEN: The directors of the agricultural and mining societies and of the society for the encouragement of manufactures have resolved to organize a "permanent exposition" of machinery of home and foreign manufacture, for agricultural, mining, and manufacturing purposes.

The expositions of 1869 and of 1875 have marked epochs in the development of our industries and especially in agriculture. The machineries and implements that were exhibited at those expositions have made it possible to cultivate on a large scale in those vast southern territories of the Republic; in the Arancania country the English and North American machinery are the powerful elements employed to timely har-

vest, before the rains set in, those cereals whose culture acquires day by day greater increase.

To these general and periodical expositions, we have believed it useful to add a permanent exposition of machinery, improving in great part the constructions that we had made.

In various countries a system has been adopted to hold annual expositions, destined for a special purpose, in place of "general expositions," in which the conglomeration of such vast quantities of industrial and artistic products do not admit of a sufficient study to profit by.

Besides, in Chili we have reasons and motives of our own, which counsel us to follow these proceedings. Separated as our country is by great distances from the great industrial centers, it is indispensable to encourage as much as possible the introduction of machinery or processes that are invented or constantly improved in those countries. Individual efforts are not sufficient in order to gain this object, and want, on the other hand, the means which the law has placed in the hands of public power.

It may be feared that a permanent exposition of machinery will not maintain a constant interest with the exhibition of new apparatuses.

However this fear may be founded, it will ever be of evident usefulness to open the field and to facilitate access to all discoveries that can improve or give impulse to our means of production.

The application of science to the industries has promoted so powerfully in the late years the increase of production by means of inventions or improvements in methods, that it is indispensable to constantly study these innovations in order that our mining, agricultural, and manufacturing interests keep up with the march of progress which is noted in other countries.

The present exposition is inaugurated with objects brought from the United States. Our active and zealous consul in New York, charged by the Government of Chili, invited various manufacturers of that country to send their machinery here. These invitations found favorable reception, thanks to the efforts of Messrs. Thompson, Rei & Co., who have taken charge to arrange in Chili the exposition of machinery that were thus sent.

The North American manufacturers are then the first that present themselves in this field, in which they will soon have worthy competitors.

In a few days the directors of the permanent exposition of machinery will send circulars to our consuls abroad, accompanied by the basis of this exposition, inviting them to take part in the same.

The directory over which I have the honor to preside has found in the Government and in the director-general of the customs favorable reception and prompt dispatch in the various measures that have been taken for the organization of this meeting.

Gentlemen, at the opening of the permanent exposition of machinery we express the hope for the good (happy) success of this trial, because our working people find in it a practical school, which makes them constantly acquainted with the progress of industry in its various ramifications.

ON CHANGES IN RUSSIAN TARIFF.

REPORT OF CONSUL-GENERAL RAINE, OF BERLIN.

I have the honor to report that, according to an official publication of the Russian Government, the import duty upon copper and articles manufactured from copper has been considerably increased.

The duty amounts now in gold copecks (equal about two-thirds cent) per pood (63 poods to a ton)—

On copper and compound metals.		Gold copecks.	Value in American money.
In rods, &c		250	\$1 66
In sheets, &c		310	2 06
Manufactures of copper and brass		475	3 16
Wire of copper, brass, and all kinds of alloys of metal		400	2 66
Wire articles of copper and alloys of copper		550	3 66
Machines and apparatus of copper and alloys of copper		350	2 33

Also metal and mineral ores (except copper and zinc ores), as well as graphite in loose pieces and pulverized iron, are now subject to duty at the rate of 4 gold copecks (equal 2.6 cents) per pood.

F. RAINE,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Berlin, April 22, 1886.

LIBERIA.

REPORT OF CONSUL-GENERAL LEWIS, OF SIERRA LEONE.

In my last, under date of the 2d instant, I had the honor to call the attention of the Department to some facts relating to the auriferous region of Bouré, about 450 miles interior from Sierra Leone.*

In connection with those facts, I consider that some information of what is going on on the coast in this portion of Africa might not be without interest to the Department.

The traveler, sailing from the north along the "west coast" of Africa, meets first the French colony of Senegal. Here he will witness a degree of political, industrial, and commercial activity, which, perhaps, justifies the appellation of "Little France," given to this colony.

Railways have been constructed along the coast, and are being extended toward the interior.

Telegraphic communication is being established between the coast and interior settlements.

About 100 miles lower down the traveler will reach the settlement of Goree, on an island about 4 miles from the mainland.

On the main-land directly opposite is situated the comparatively recent and growing settlement of Dakar.

Telegraphic and railroad communication exists between Dakar and Senegal. From these three settlements the French are endeavoring to penetrate to the interior, commercially, by the construction of roads and by military enterprises.

The prospect of their success among the interior tribes, notwithstanding all this energy, is not very cheering.

The natives everywhere seem to be opposed to their pretensions and efforts.

An American trading establishment, I believe, is doing a good business at Goree.

Below Goree and Dakar is the British settlement of Bathurst, on the Gambia River, which formerly yielded considerable trade; but, owing to neighboring wars, the trade has fallen off, and what little there is now is largely in French hands.

There is one American house here which does not seem to be behind others in successful enterprise.

Between the Gambia and Sierra Leone, along about 400 miles of coast and a strip of maritime territory claimed by the Portuguese, are three small French trading settlements established at Rio Nunez, Rio Pongas, and Meelacourie. At the mouth of a small river, called Dubreka, between Meelacourie and Rio Pongo, claimed by the French, the Germans have recently raised their flag in spite of French protestations.

The activities of the French and the recent action of the Germans, together with the depression of trade, have roused the people of Sierra Leone to the importance of securing the neighboring seaboard and interior territories to the British.

They have petitioned the home government to authorize the governor to annex those territories to Sierra Leone, the natives seeming all anxious to come under British rule on account of French aggressions.

An American business house exists at Sierra Leone, established some ten or twelve years ago, and is holding its own in the competition with European firms.

Two hundred miles below Sierra Leone, at the Manna River, begins the Republic of Liberia, extending about 400 miles along the coast to the San Pedro River.

This country is, I believe, considered by those who claim to know, the most fertile and productive of all West African countries.

Liberia is an interesting instance of American benevolence and foresight. Founded by a philanthropic society having its headquarters at Washington, it has, with its

* Printed in Consular Reports No. 60, p. 147.

slender resources, accomplished a great work for this part of Africa, and seems to present an inviting field for enterprising black men from Africa.

Many of the people have emigrated from the United States and are more favorable to the extension of American influence in the country than of any other.

The constitution is modeled after our own. The president and vice-president are elected for two years.

The legislature consists of a senate and house of representatives, and all other branches of the civil service are the same as those of the United States.

The right of suffrage is based upon a slight property qualification (real estate).

The religion is Protestant and the usual orthodox denominations have schools and churches in the country, viz, Methodist, Baptist, Presbyterian, Episcopalian, Lutheran, and recently the Roman Catholics have established a mission at Monrovia.

A college established some years ago by a Boston organization is considered by some premature; but if removed toward the interior, surrounded by a good quantity of land, and carried on on the industrial system, there is no reason why it should not be useful in Liberia, providing the management was in proper hands and the teachers the right class of men.

From all accounts which I have been able to gather from many people, Liberia is rich in natural resources, and with a slight change in governmental restriction, and with the application of capital, would be unsurpassed in productiveness.

In mineral and agricultural capacity it is thought to be without a rival in this part of Africa.

Among its products are palm-oil, palm-kernels, ground-nuts, cocoa-nuts, cola-nuts, cam-wood, barwood, indigo and other dyes of different colors, red, yellow, and brown, bees-wax, india-rubber, gum copal, cotton, ivory, rice, Indian corn, yams, cassada, sweet potatoes, oranges, lemons, limes, plantains, bananas, guavas, pine-apples, papaw, mango, plums, alligator pears, bread-fruit, tamarinds, &c., coffee, sugar-cane, cocoa, arrow-root, bullocks, sheep, hogs, goats, fowls, &c.

The country seems peculiarly adapted to the successful raising of coffee, and this Liberian coffee has within the last few years acquired, I believe, a reputation very high. The immigrants from the United States, especially in recent years, have been devoting more attention to its cultivation. They are pushing their settlements towards the interior and enlarging their farms.

Some of the Liberian farmers and merchants have made money, and live in comfortable and even elegant style. In the month of July last four Liberian merchants from different parts of the Republic passed here on board the English mail steamer on their way to Europe for business or pleasure. They were all colored men, born in the United States, and emigrated to Liberia when children.

The great needs of Liberia are civilized population and capital, both of which can be readily furnished from the colored population of the United States.

Fifty thousand intelligent negroes, located about 50 miles from the coast, would fill the lower Niger Valley with a wholesome industrial influence.

Samdu, the great Mandingo conqueror (of whom I have already written), would no doubt welcome them as co-workers in the great enterprise of opening the roads and keeping the peace.

I have no means at hand for giving a correct statement of the exports and imports of the Republic, but I believe them considerable, and the country capable of easily doubling the present output.

German and English steamers stop every week at some of the Liberian ports, and there are large Dutch establishments.

But although Liberia is what might be called an American production, and the people believed to be anxious to give American citizens exceptional advantages in the country on the coast, yet there is not a single American house established and doing business in any part of the Republic. American vessels occasionally make trips and do a transient trade along the coast.

I shall be glad if anything I have written may quicken American enterprise in this direction, either of a commercial or agricultural nature.

Such undertakings properly and intelligently conducted, would, I think, not fail to be remunerative and confer great blessings upon this continent.

JUDSON A. LEWIS,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Sierra Leone, November 6, 1885.

CULTIVATION OF COCOA.

REPORT OF CONSUL BIRD. OF LA GUAYRA, VENEZUELA.

An article upon this subject from this consulate, published in No. 54 of Consular Reports, has elicited some correspondence as well as orders for seed from the State of Florida, and with the conviction that it may be successfully grown there, and with the view of furnishing all necessary information to those who may desire to cultivate the plant, the following report, compiled from trustworthy sources, is respectfully submitted:

THE COCOA PLANT.

Theobroma, a Greek word, signifying *food of the gods*, is the botanical name of this plant. As Striffler has said—

The *fecula* and oleaginous matter that are *par excellence* the alimentary substance dispensed by the vegetable kingdom are often found combined in the same vegetable, and nature, responsive to the necessities of our ephemeral existence, almost always adds to this combination some aroma, thus blending the agreeable with the useful. This triple combination is especially noted in the cocoa, and for this Linnæus, in his enthusiasm, gave it the name of *Theobroma*. Indeed, it only wants the property of sweetness to give us an idea of the fabled ambrosia that, with the delicious nectar, furnished aliment for the mythological deities.

This genus comprises some sixteen species that pertain to the warmest zone of America, and that it would be unnecessary to enumerate. We will only consider the two most important that are cultivated here, a knowledge of which will suffice for the cultivation of all.

The red cocoa, commonly known as violet cocoa, is a plant 13 to 16 feet high, with upright and slender branches. The leaves are slightly pediculate, 8 to 10 inches long, oblong or ovate-oblong, alternate, perfect, smooth, and of the same color on both sides. The flowers are small, reddish, or yellow, and numerous, stigmas caulinareous, pendulous, or axillary; the fruit reddish, high-colored or yellowish, smooth, ribbed like the musk-melon, formed somewhat like the cucumber, but pointed at the extremity; beans larger than the almond.

The green variety, commonly called white cocoa, is a plant 6 to 10 feet high when cultivated; but in its wild state attains to the height of 25 to 30 feet, with outspreading branches. The leaves are very similar to those of the variety just described. The flowers are also similar, though somewhat violet-colored; fruit of clear green color, very wrinkled and resembling the fruit of the balsam-apple, though, of course, much larger; the beans are smaller and less nutritious than those of the former variety, though equally esteemed.

All authors agree that—

- (1) The cocoa is indigenous to the soil of America.
 - (2) It flourishes in the shade of the forests and is developed with luxuriance at the bases of mountains, where it is watered by running streams or near rivers, where the soil is alluvial or mixed with sand and clay.
 - (3) It requires a temperature that does not fall below 75° Fahrenheit.
- It may therefore be deduced that, for its perfect development, cocoa requires shade, warmth, and moisture.

In low land, on the banks of streams, that is to say, in alluvial soil, it can always be safely if carefully cultivated. Although in such cases it is liable to inundation, yet all danger will be avoided if the land is

well drained and kept free from the drifts and deposits of the waters. An excess of moisture will rot the roots and destroy the plants; and so, if the land does not drain well, it is necessary to open trenches in the direction of the greatest declivity.

Cocoa needs the shade of trees to maintain a humid atmosphere and to preserve the moisture of the soil. In a hard or clay soil, not naturally moist, it will be impossible to grow it unless so located that by means of small trenches water may be turned upon it every fifteen days during the summer months. A virgin soil is considered best, but fertile fallow land, suitable for corn or bananas, is adapted to its cultivation. In the territory of Loba, province of Mompos, Colombia, are to be seen some hundreds of cocoa trees upon a hill, growing vigorously without irrigation. This, however, is rare. It may be laid down as a safe rule that where the palm and banana grow naturally the soil is well adapted to cocoa and coffee.

SELECTION OF SEED.

The general rule is that all fruit possesses the full germinative quality when well ripe; but the cocoa is an exception to this rule, since beans matured, though not fully ripe, are considered best, and as in this stage it is much easier to hull them, they are preferred. Seed pods chosen for the purpose should be a brighter color than the green pods, and on thumping them with the finger will emit a sound like that of a ripe watermelon. The beans will be found loose in the shell. The pods should be carefully opened with a knife and the beans emptied into a tub of clear water, to remain for twenty-four hours, in order that the cuticle around them may be softened and easily pulled off. As they are divested of this cuticle they should be thrown into another tub of pure water, from which they should be planted within six hours; if allowed to remain longer they turn red and are lost. The beans that, after being peeled, swim on the surface of the water, are worthless.

PLANTING.

The beans are planted in a nursery or the orchard itself. A good nursery is, however, considered most proper and reliable. It should be 5 feet wide and as long as necessary. It should be well plowed or spaded, covered with a brush arbor to shade from the sun and laid off in cross ridges 8 inches apart. The seed should be planted 4 inches apart on the top of the ridge, and a little more than half underground, and all covered with banana leaves. They should be watered every morning and evening. Before planting they have a whitish or violet color. After ten hours the leaves may be removed, when it will be observed that the seeds are rising out of the soil, urged thereto by the germinating roots. If they assume a greenish color it is an indication of perfect germination. The irrigation must be continued, in the absence of rain, for six months, when the plants are ready to be set in the orchard. It is found best to plant the nursery in this climate in November, to transplant in April or May. At the period of transplanting a rainy season should be selected, each plant taken up with the earth attached and carefully set in its place. If properly done at a propitious time there is no danger of losing a single plant.

If the seed are to be planted in the orchard, three should be placed in each spot in the manner before described, and covered for eight days to protect them from the sun. When the plants are 20 inches high, two plants may be drawn out and the most flourishing one left.

SHADE.

In the first years of its growth cocoa must be shaded. The general custom is to plant it in the shade of bananas. For this purpose the bananas should be planted in August at 12 feet apart, and the ground kept clean of all undergrowth. The cocoa plants should be set midway between each two bananas, and as the shade of the banana is not perennial, it is necessary to plant between them other trees of rapid growth and more enduring shade. Fruit trees are not desirable, since they attract birds and insects. At four years of age these trees should so shade the cocoa as that the bananas may be cut away and thus encourage the growth and development of the former.

It must be urged, however, that a virgin forest, possessing the conditions of soil, &c., before alluded to, is in every respect the most suitable location for a cocoa orchard. The great advantages of natural shade and fresh soil combine to give flourishing trees at small cost. Thus we observe immense groves of most luxuriant cocoa trees growing wild in the forests of Guayana, Colombia, and Brazil. The ground must be kept clean of all undergrowth. Planted under these conditions, with labor at 50 cents and board per day for each person and seed at \$2 per hundred, it may be safely calculated that each tree will cost not more than seven and a half cents the first year and five cents each for each of the three succeeding years when it will come into bearing. Planted with bananas the cost must be four times as great.

There can be no doubt that, if the seed are planted directly in the orchard instead of in the nursery, the expense and trouble will be less, and if set in a virgin forest they should attain the height of 20 inches in six months. With very little care, except to keep the ground clean, the trees thus set may be trusted to bear a crop in the fourth year.

DEVELOPMENT OF THE PLANT.

As before observed, the cocoa seed planted nearly half out of the ground soon begins to show vitality, and in the first week changes from a whitish or violet to a green color. It is then gradually pushed out of the ground to the height of 8 inches by the action of the roots, at this height the first leaves appear above the now open seed. It continues to grow like a twig full of leaves till, at the age of eighteen months, it has attained from 28 to 32 inches in height, when it begins to throw out lateral shoots and in two years it forms a head of five branches. It is now considered out of danger. At the age of thirty months it begins to bloom, but it is necessary to pinch off these flowers for the following eighteen months in order to make a robust tree and to give good fruit.

After the tree has headed it has a vicious tendency to grow still higher by throwing out vertical suckers, sometimes from the branches but most generally from the crown of the head. At the height of 3 feet these suckers also begin to head and throw out lateral branches, and from these in turn grow suckers *ad infinitum*. These suckers should be carefully exterminated to preserve the luxuriance and productiveness of the tree, and the operation may be practiced at all seasons. At four years the tree is covered with flowers from the ground to the tip of the limbs, and its productiveness augments to the eighth year, when it is in full prime, and so continues to the age of forty years. It gives two full crops per year, in the months of July and December, respectively, and each tree yields from 4 to 6 pounds of fruit. Besides these crops the tree flowers and fruits all the year round. The average crop is

computed at 50 pods per tree, each containing 30 to 40 seed. Thirty dry seed weigh 2 ounces, so that from 8 to 10 pods will yield 1 pound of dry cocoa.

The cocoa trees should be planted at least 12 feet apart, but 13 feet distance would better conserve their luxuriance, productiveness, and longevity.

THE CROPS.

The fruit pods of the cocoa ripen in four months after the blossom falls off, when they assume a reddish or yellow color, and are 6 to 10 inches long at maturity. The beans are encased in a buttery pulp of sweetish-sour flavor and quite agreeable to the taste. A savory sweetmeat is made of the pellicles that cover the seed.

The cocoa pods are carried to the house and spread out in the shade, where they should be left for eight days in order that they may become mellow. They are then opened with a knife, care being taken not to cut the beans within. The beans are then taken out and placed upon tables exposed to the sun, when they turn red. Cocoa beans of a dark color and covered with a whitish mold are generally preferred in the market, because it is supposed that after passing through the fermentation necessary to impart this color, the beans lose something of their acrid quality and have a finer aroma. It is also said that cocoa thus treated is not so liable to spoil. To ferment or sweat the beans it is proper to put them in a cellar, or in boxes or barrels in a cool place, covering them with banana leaves and putting boards and weights on top. They are left in this condition four or five days, but in the mean time must be stirred and aired every morning and evening, after which they are spread out in the sun and dried until they have a hollow or rattling sound on being stirred, when they are ready to be sacked for the market.

The empty pods are used to manure the trees. If roasted or boiled for some time, they will make an inferior kind of chocolate destitute of any fatty principle, but very agreeable to the taste. This process for making chocolate is very common amongst the poorer classes.

ANALYSIS.

Oil of cocoa.....	53.10
Dark albumen (aromatic).....	16.70
Starch.....	10.91
Fatty matter.....	7.75
Vegetable fiber.....	0.90
Red coloring matter.....	2.01
Water.....	8.63
	100.00

ENEMIES OF COCOA.

Wood lice.—These insects often build their nests in the crown of the tree, and, together with birds' nests and all kinds of parasites, must be carefully exterminated.

Peeling ants.—These are very destructive, burrowing holes into the tree, peeling off the bark, and sucking the sap. To destroy them, inject spirits into their holes, or enlarge the mouth of the hole and plaster it up with mud or mortar. .

Borers.—The cocoa tree, especially when young, is attacked by these pests. They bore into the trunk of the tree, *above the ground*, and finally kill it. Their presence is indicated by the gum that exudes from the tree, and they should be promptly cut out with the knife.

Sawyers.—These insects belt the trunk of the tree, eating the bark in their track. If the tree is found already belted, it should be daubed with mud and bound up with leaves, in order that the sap may be forced to continue its upward flow and new bark formed over the wound.

Squirrels and birds.—These infest the cocoa plantation and destroy much of the fruit. The shot-gun is the only remedy that can be suggested.

DISEASES OF COCOA.

Pasmason.—This is the premature falling of the fruit, and is due either to prolonged drought or to drought succeeded by excessive rains. In the latter case every effort should be made to perfect the prompt and complete drainage of the soil.

Blight.—When the trees come into bearing they are subject to this infirmity. Its presence is detected by black stains that appear on the trunk and sometimes on the limbs. The diseased bark must be carefully cut off, the wounds wet with water, and covered with mud. Thus proceeding, the blight will be easily eradicated and new bark quickly formed. There is also a pale stain that appears on the trunk and limbs; but this, so far from being a disease, is an indication of healthfulness and full bearing.

The beans of cocoa, after being prepared for market, are subject to moths or weevils. It is best, therefore, to store them in lofts, where, from time to time, and especially during damp weather, they may be smoked. Some persons are accustomed to sprinkle them with salt water before storing them, to guard against the insects. It is always best, in view of these contingencies, to dispose of the crop within eight months after it is gathered.

In conclusion, it may be said that the cocoa crop pays for its cost with usury. It does not incur the risks that imperil the tobacco crop; it is safer, less expensive, and more profitable than stock-raising or sugar-growing, and is much more easily and cheaply gathered and manipulated than coffee. While the coffee crop is often lost through the scarcity of hands to gather it, as well as lost through the low price paid for it, the cocoa crop requires only one man to husband the crop from a thousand trees, and is worth twice as much per pound in the market.

WINFIELD SCOTT BIRD,
Consul.

UNITED STATES CONSULATE,
La Guayra, January 25, 1886.

PETROLEUM AT MARSEILLES.

REPORT OF CONSUL MASON.

DEPRESSION IN THE INTEREST.

The petroleum traffic of Marseilles shares in the general depression which has fallen upon that department of industry and commerce everywhere during the past three months. Importers of both crude and refined oils here agree that there is in fact no market at present, the few purchasers during the past month having been able to make practically their own terms.

On the 11th of June a pool was arranged and signed by the five refining firms in this district, two of whom have refineries at Marseilles, two at Nimes, and one at Balaruc, in the neighborhood of Cette. By the terms of this compact, the amount of oil to be refined per month by each firm is designated, and all agree to sell no refined oil below a specified price. Under this arrangement, the local situation is slowly improving, but no important revival is expected until autumn. Statistics show that the consumption of refined petroleum in Southern France is increasing steadily but very slowly in comparison with most other European countries. The decline in retail price from 52 cents per gallon two years ago to the present rate of 35 cents, has not caused a corresponding increase in the domestic use of petroleum, for the reason that most French people are, by nature, extremely conservative, and have besides an exaggerated dread of fires and explosions, as well as a prejudice against gas and every form of illumination except candles and lamps which burn vegetable oils. For the same reason petroleum stoves for cooking and heating, although offered for sale here in great variety, have had, thus far, only a very limited success, and this notwithstanding the economical tendencies of the people and the high prices of charcoal, wood, and other kinds of fuel.

The lowest price for refined petroleum recorded in this market was that of a purchase made a few days ago by a Marseilles importer, named Philipon, under the following circumstances: It appears that the Paris banking house of Rothschild had foreclosed mortgages upon certain refining property in the Caspian oil district. These refineries had on hand a quantity of kerosene which the Rothschilds, in the existing condition of the market, refused to receive. It had, therefore, to be sold for what it would bring, and Mr. Philipon was thus enabled to purchase 20,000 cases, to be delivered at Algiers, for the nominal price of 82 cents per case, less 1 per cent. discount. The oil was of inferior quality, and the circumstances attending its sale accidental and not likely to recur; but the sale had a depressing effect on this market and illustrates the extraordinary prostration which has overtaken petroleum interests in the Caucasus.

In a report from this consulate on the 15th of December last some account was given of the "Standard Russe," a Marseilles company of large capital, which has extensive wells at Ilskie, in the Kouban district, connected by a pipe line with its refineries at Novorossisk, on the Black Sea, eastward of the Crimea. This company is still in an embarrassed condition, and is seeking to place a loan of a million and a half of francs to keep its works in operation through the present period of depression and avoid the serious losses and deterioration which result from a prolonged suspension.

EGYPTIAN PETROLEUM.

For reasons sufficiently obvious, the recent announcement of important petroleum discoveries on the Egyptian shore of the Suez Canal has awakened but little interest in this market. In the first place, the naphtha discovered there is reported to be of very low quality, its proportion of illuminating oil being stated at only 10 per cent. However great the quantity may eventually prove to be, and however favorable its location may be for marine transportation, it is believed by those best informed here that the Egyptian naphtha will only serve as fuel, and will not enter into competition as a refining material. Moreover, petroleum investments in Europe are now at the lowest possible ebb. The

recent meeting of refiners at Baku failed to devise any remedy for the collapse in Caucasian oil interests, and experienced capitalists refuse for the present, at least, all further investment in that direction.

AMERICAN OIL PREFERRED.

For the uses of all refiners in this district, even those interested in Russian oil territory, the American crude still retains its long established preference, two cargoes having been sold this week, for July and September delivery, to a refiner at Nimes who had refused offers of Russian crude at any price.

A comparison of crude oil imports during 1885 and the first five months of the present year will show how completely the Russian naphtha has been vanquished in competition with the American. The total import of crude petroleum at Marseilles during 1885 was 11,077,765 kilograms, of which 1,649,624 came from Russia, and 9,427,781 from the United States. For the first five months of 1886 the total import has been 4,969,558 kilograms, all of which, except 320 kilograms, was of American origin.

For the reasons stated in preceding reports, the present French import duty on crude naphtha is an effective protection for the rich, superior American crude against serious competition from the Caucasian oils, which require to be condensed or partially refined in order to yield in manufacture here even 50 or 60 per cent. of kerosene.

FRANK H. MASON,

Consul.

UNITED STATES CONSULATE,
Marseilles, June 19, 1886.

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COMMERCE, MANUFACTURES, ETC.

No. 65—JULY, 1886.

SWINE INDUSTRY AND AMERICAN MEATS IN EUROPE.

HUNGARY.

REPORT OF CONSUL STERNE ON THE SWINE INDUSTRY OF HUNGARY.

It seems from all reports that the year 1885 has been one of the most disastrous ever known to the swine industry of the United States, through the ravages of the disease known as the "hog cholera." This fact, and the fact that here in Hungary, where the stated industry is also carried on to considerable extent, losses from a like cause are comparatively small, have induced me to investigate the system as applied here.

The details, which will be given further on, have been gathered by myself partly during several visits to one of the establishments described below, and also in other part were kindly furnished to me by Mr. Franz Kern, of this city, who by study and practical experience may be deemed an authority on the subject. To him I had submitted a number of queries for the purpose, and to make the following details better understood I shall in the first place introduce those queries here, to wit:

(1) Is there any special race of swine raised in Hungary, and what is the nature of such; also, what are the results of experiments which may have been made here by the introduction of any foreign races?

(2) Is the race of swine which is specially raised here adapted more for the production of meat or of fat?

(3) In what manner are the animals fed and cared for until the time when they are to be fattened?

(4) At what age of the animal does the latter process usually begin, and what is their general condition at this time?

(5) What are all the details of this process—that is, how are they housed; how are they fed and with what; what is the usual length of time required to fatten the animals, and is there anything introduced into their food during this time to promote their health or to prevent disease? Please give some statistics showing the results of the system applied.

(6) What do you consider the advantages of fattening the animals during summer instead of in winter?

(7) Does Hungary ever suffer great losses from epidemic diseases amongst the swine; what is the nature of the diseases existing here; what remedies are generally applied and the results of these? State the average rate of losses from all causes.

(8) What are the measures adopted to prevent the introduction of disease from without, and what is done to prevent the spread of disease within the State. What is done with animals which are found diseased and such as are only suspected of being diseased?

(9) What, in your opinion, are the advantages of the system as practiced here in Hungary over the system in the United States?

The information thus gathered enables me to say the following:

SPECIAL BREEDS OF SWINE.

The swine bred and raised in Hungary may be called a special race, since no other country produces an exact like sort; therefore they are known to the trade at home and abroad as "swine of Hungarian race." The race has been developed by a carefully and long maintained system of crossing the original native "Szatonta hog" with the Servian "Milosah race" and the "Chinese fat-hog race."

In color they appear in two sorts, those which are white all over excepting the foot and the snout, which are black, and those which are black all over excepting the bellies, which are either white or yellow.

Animals showing any deviation from these markings are not popular. The animal is of very strong, compact structure, has a short head with broad forehead, overhanging ears, short and strong legs, is very strong in the croup, and has a thick coat of very curly hair; the latter enables it to resist the cold quite well, and its general composition of body makes it possible for quite heavy fattened animals to be easy of foot and be readily transported.

Experiments which have been made here with animals of foreign race show that they are well adapted to this climate and thrive quite well here, but they soon lose their original characteristics if they are crossed with the Hungarian animal, acquiring those of the latter.

MEAT OR FAT?

The Hungarian hog may be termed an animal for fat *par excellence*, the thoroughly fattened animal producing 66 per cent. of fat to 33 per cent. of meat, bones, &c, combined, the fat itself again producing about 85 per cent. of pure water-free lard.

As before said, though animals of foreign race and which are specially animals for meat—such, for instance, as the German hog—thrive quite well here, the Hungarian people prefer to raise the animal for fat, though experiments have proven that the former can be raised also with profit, and an overcrowded market might often be avoided by the adoption of a more varied production.

Thus the practice can only be assigned to old settled prejudices, which, as is known, are very difficult to overcome in older countries, though I can hardly understand why such ideas prevail here in this special industry, for however slow the Hungarians may be in general industrial advance they certainly leave nothing untried or undone to reach perfection in things pertaining to the general branches of industry.

The Government in particular acts very praiseworthy and what may be called "parentally" in this direction, leading and aiding wherever there seems to be the prospect of benefiting the conditions of industry or to overcome old settled and impracticable prejudices.

CARE BEFORE FATTENING.

After the pigs are weaned they are driven to pasture, and a little barley is given to them at times; later they are also permitted to pick

up what they can in the harvested fields, and when these resources are exhausted they are fed with beets, pumpkins, and second-class corn.

About six weeks previous to the time when they are transferred to the fattening establishments the animals are placed on better rations, the main object being by this gradual change to "rationally" produce healthy, robust animals which may be thoroughly qualified to profitably undergo the final process of fattening.

AGE OF FATTENING.

Pigs which are selected for fattening in summer are usually taken at the age of twelve to fourteen months and weighing 110 to 143 pounds; those which are selected for fattening during the winter are taken at the age of fifteen to eighteen months and weighing 132 to 176 pounds.

Old animals which have lost their value for breeding purposes are always fattened in winter, since they are best able to resist the cold, winter being considered the most trying season.

PROCESS OF FATTENING.

It is the general practice here that people, with the exception of what may be needed for own family use, do not fatten the animals which they raise, as is done in the United States; therefore when at the proper age they are sold to those who make the fattening a special business, and by these are concentrated at the several establishments over the state which have been specially adapted to this purpose. Such are always located near some railway, and of course in an agricultural center, and such an establishment may in fact be called a real Porkopolis, for, like a city, it is regularly laid out in streets and lots, and usually has a system of water-works.

The different larger or smaller "lots" are generally owned by the people who are in the business or by stock companies, though they can also be rented, as sometimes by those raisers of pigs who exceptionally also wish to fatten them.

This peculiar system of dividing the industry is brought about by several causes:

First, it is claimed, and I think with reason, that greater attention can be thus given to the animals and a higher degree of knowledge of the nature and the requirements of the animals can be reached thereby, which is certainly quite an important item in a business like this.

Then it is also sure that not all localities are alike suited to both the raising of pigs and the fattening of them.

Another item is the fact that the Hungarian animal is capable of taking up a great deal of food, and it pays best to not crowd it, but to extend the time of fattening over the longest space of time possible, which naturally requires close attention over a long time, which cannot be so well bestowed if general farming is carried on at the same time. At any rate experience has shown here that only by the division of the industry it can be made at all profitable.

In all there are about twenty-five establishments in this state where the fattening is carried on; the largest of these is located at Steinbruch, near this city, and is able to hold 125,000 head at one time. The others in the state are capable of holding from 10,000 to 30,000 each, and altogether probably 325,000 head at any one time, but it does not follow from this that twice this number are fattened in a year, for there is not as much of this done in winter as in summer, for reasons which will be shown further on.

The reasons why the principal establishment is located near this city are, for one, that here the necessary capital is more ready to hand; further, that as the largest city in the state (over 400,000 inhabitants), the greatest amount of meat is consumed here, thus avoiding the risk which is caused by shipping fat animals over long distances.

Salted pork is hardly known here, and since the export is carried on also in live animals pork-packing houses do not exist. Therefore, with the exception of what is thus exported, the animals are all sold to the butchers, who retail the meat to the consumers as these may need it, and with exception of the hams, which are cured in the usual way, and some bacon, which is cured with a sort of red pepper, called paprica, the meat is all consumed in the green state; that is, cooked or fried, of course.

DETAILS OF BUILDINGS.

I now come to that part of my report to which I would call the special attention of those who may take an interest in the subject.

The establishments referred to are cut up in sections (several of which may be owned by one firm), which are able to hold 120 to 160 head each; the sections are divided by strong fences, but can also be connected through existing gates.

A section for 160 head is 60 feet wide by 90 feet deep; the rear part to the depth of 30 feet is reserved for a resting place, and is covered by a low shed, and the ground is covered with a layer of 2 feet of clean, dry sand, which is renewed as often as it becomes earthy or damp. Thus the animals have a soft, clean, and healthy place to rest, and are also protected against any form of unfavorable weather.

It is wonderful to observe how instinct causes the animals to keep this place clean for a longer time; animals which dare to ignore the rules of cleanliness are promptly driven out by their neighbors, and even sometimes bitten to death for it. Sand certainly has some advantages over straw for bedding; it has natural cleansing qualities (and the cleaner animals always fetch the best prices). Cleanliness causes health, and this again the necessary good appetite, which alone can bring about a profitable realization of the food which is given.

The rest of the section, the front part, is fitted up as the feeding place; it is paved with hard-burnt brick, and this floor is kept as clean as possible by sweeping and a free use of water.

In one corner there is a square place fitted up as a bath, also paved and made easy of access; it is large enough to allow 20 animals to bathe at one time, and about once in a week it is thoroughly cleansed and filled with fresh water.

There are about twelve troughs for feeding, each 15 feet long, and high and wide to suit, also one large trough for drinking water, which are so protected that the water cannot be soiled.

FEEDING.

Finally, each firm possesses the necessary motive power to grind what food may be given in ground form, and to supply the all-important fresh water, where there should be no regular water works on hand.

The feeding is done twice a day, and only corn and barley are used, the quantity of the latter in proportion to corn depending upon its higher or lower price.

Much of all the food is given in a rough-ground form, the barley nearly always so.

The younger animals receive about 7 pounds of food per day and the larger, older ones, 8 to 10 pounds each. Strict attention is given that there is never more given than can be comfortably eaten, and that thus a robust appetite may be maintained, nothing remaining in the trough after a meal being the test.

The ground-up food is mixed with cold water in summer and with warm water in winter, and made up into a pap-like mass.

Once each week the animals receive common salt and bitter salt; besides this there is always a lump of rock-salt hung up, at which they lick whenever they like to do so.

Of course the state of health is continuously watched, so that remedies may be applied in time, where needed, and greater losses be avoided.

The period of feeding lasts from five to six months, the animals being deemed fully ripe when their shape has become compact, when they cease to eat a reasonable quantity, and when they become indifferent to leaving their resting places.

The younger animals usually reach a weight of 420 to 500 pounds, and the older ones 485 to 600 pounds. The results of long experience show that during the period of fattening the animals gain about 20 pounds to every 100 pounds of food given to them, which I consider a very large ratio of increase.

EXPERIMENTAL FATTENING.

The following are the results of one of the experimental fattenings which were made at Steinbruch last year: One hundred and fifty pigs were penned up on February 25, weighing 27,918 pounds (186 each) at the age of fourteen months.

On March 25 they were weighed, with the result that 148 of them weighed 30,672 pounds (207 pounds each). The lacking two had died, weighing 378 together. During this month they consumed 11,385 pounds of corn and 1,771 pounds of ground barley, a total of 13,156 pounds, or nearly 3 pounds each per day, showing a gain like 20.9 per cent. of the weight of food given.

On April 25 they were weighed again, and the 148 head showed an increase of 5,104 pounds within the last interval, and which was produced from feeding 22,451 pounds of corn and 3,410 pounds of ground barley, a total of 25,861 pounds, or 5.72 each per day, and showing a gain like 19.7 per cent. of the weight of the grain consumed.

On May 25 they were weighed again, with the result that an increase of 7,458 pounds had been produced in the interval from feeding 19,459 pounds of corn, 10,080 pounds of ground corn, and 3,478 pounds of ground barley, a total of 33,017 pounds, or 7.37 each per day, showing a gain like 22.6 per cent. of the weight of grain consumed.

On the 27th of August they were weighed again, with the result that in the interval an increase of 21,615 pounds had been produced from feeding 23,540 pounds of corn, 62,640 pounds of ground corn, and 20,630 pounds of ground barley, a total of 106,810 pounds, and showing a gain like 20.2 per cent. of the weight of grain consumed.

During the last interval two more had died, weighing together 594 pounds, and 22 had been sold weighing together 8,316 pounds (378 pounds each), and the rest, the 124 head, showed a gain during the whole period like 20.6 per cent. of the weight of grain consumed.

The experiment was discontinued at this time, though the animals were yet in good appetite and feeding could have been profitably continued.

Some of the other experiments showed a total gain like 20.6, 21.1, and 21.7 per cent. of the weight of all the food consumed, and the increase during some of the single months showed a gain even as high as 25 and 26 per cent. On the whole I conclude that the greatest gain always takes place during the earlier half of the period of fattening, and that more and more ground food is given as the process goes on, the barley nearly always in ground form.

SUMMER AND WINTER FEEDING.

The reasons for preference to fatten the swine in summer instead of in winter are both of an economical and a sanitary character. In the first place, there is no question that a great deal of food is required in winter to create alone the necessary amount of animal heat, which food in summer could go towards producing meat and fat. Experience has shown, at any rate, that all other conditions being alike, the gain in winter never shows more than 12 to 15 per cent., as compared to the gain of 20 per cent. (described on page 189), and which refers only to summer fattening.

There is a larger amount of mortality in winter, for the well-bred animal is very sensitive to cold, and thus suffers from some diseases in winter from which it is entirely exempt in summer.

Cold, damp weather and sudden changes in the temperature cause especially rheumatism and gout, which often cripples animals and always interferes with digestion and the capacity to take up food. In short, the animals do not thrive so well in winter, and it, therefore, seldom pays to fatten them then.

DISEASES OF SWINE.

The diseases prevailing amongst the swine in Hungary and causing most of the deaths, are the erysipelas and a disease somewhat similar to the hog cholera (here called häutige Dräune), but these, the latter, have never been known to have existed to such a disastrous degree as frequently occurs in the United States, and where it exterminates whole herds at times.

Other diseases are the colic which attacks nearly every animal after it is first transferred to the fattening establishments, most likely in consequence of the sudden and total change of diet and manner of living, but this lasts only a short time and causes very few deaths.

Another disease is a sort of distemper, the foot-and-mouth disease (called here the "Ulaul und Klauen Seuche"), and though it does not cause many deaths either, it is very much dreaded, and therefore guarded against, for it hardly ever makes its appearance without infecting whole herds, districts, or all the swine in the state when it becomes a main cause to stop all export, and therefore is so much dreaded, for all the real damage caused by it is simply this, that while they have the disease (about ten to twelve days) they cannot eat much, thus interrupting all progress of the animals.

REMEDIES.

The usual remedies applied are the following: In erysipelas they receive cold baths, and crystallized carbolic acid is added to their drinking-water, also a change of pasture is resorted to, and this treatment proves quite satisfactory.

In cholera the emetic is applied, but with very doubtful results. In colic and distemper there is no especial treatment resorted to, otherwise healthy animals always passing safely over the attacks of the two.

In cases of over-feeding doses of hydrochloric acid are given to thin the blood of the animals, and for indigestion they are simply treated to a short spell of starving.

The losses from all causes to the herds at large average from 5 to 6 per cent., and the losses caused by transportation and during the period of fattening average about 3 per cent. of the number selected for the purpose.

These, I think, are comparatively very small losses, and mainly due to the fact that at all times the animals are closely watched for any symptoms of disease, so that remedies may be applied in time, thus avoiding many losses, and, what is very important, that in epidemics a wider-spread infection may be prevented.

In this connection I wish to add that I have several times been approached by people who claim to possess some secret "cure-all" for swine, and who desire to sell their remedy to the United States Government.

Deeming the matter of sufficient importance, I made proper inquiries as to the character of what they claimed, but the result was always such that I did not consider myself justified to molest the Department with the proposals of these people. They proved to be nothing but quacks.

INSPECTION OF IMPORTED ANIMALS.

Roumania, Servia, and Bulgaria are the countries from which swine are imported into Hungary. To prevent the introduction of disease from there, a strict inspection is maintained at all the border stations by Government officials, and should the arriving herds show the least evidence of epidemic disease the whole lot is at once turned back and the minister of commerce and agriculture promptly informed of the occurrence, and if it appears that the whole state of origin suffers from epidemics all import from such territory is for the time prohibited.

The Government also keeps a strict eye upon the several districts within this state, and should an epidemic disease make its appearance within any one of them, such district is at once isolated; that is, no animals are permitted to leave it until the danger is found to be past.

Upon arrival at the fattening establishments a renewed inspection is made, and should a single animal show symptoms of epidemic disease, the whole herd to which it belongs is at once returned to where it came from at the expense of the owner, and the cars which carried them are disinfected; but, in any case, all imported animals are subjected to a quarantine of about fourteen days, during which time these animals, as well as those from this state, before final admittance, are singly examined to see whether they may be measly (in German, "finnig") by viewing the under part of the tongue, which shows the disease, and all animals found thus possessed are at once turned over to the rendering-house connected with every establishment to be made into soap or low-grease, and there are Government officials to see to it that no illegitimate use be made of such material. The price which such animals usually bring is generally about one-fourth of that of healthy animals.

Should, after all these precautions, an epidemic disease make its appearance, the suspected animals or the whole herd are at once isolated and placed under veterinary observation. If cured, the animals are permitted to continue as before; otherwise, the same disposal is made

of them as previously described, and the places where the animals have been kept are thoroughly disinfected by the use of carbolic acid.

In this connection, I will also say yet that the meat of all regularly-slaughtered animals is inspected against probable disease before it can be sold to the consumers, and all unhealthy meat is confiscated and destroyed or treated as above described.

My ninth question was left unanswered. I was told that the given details will speak for themselves.

Of course, the American farmers, if they get to see this report, will themselves be able to make a practical comparison between their own system and that which I have described.

AMERICAN METHODS COMPARED WITH HUNGARIAN.

Notwithstanding this, I cannot resist adding a few more remarks of my own, and while I regret on this occasion that my previous experience in the given direction has been very limited, I can yet claim that I have seen enough of the industry as in the United States to compel me to acknowledge at once that, compared with the system as carried on here in Hungary, that in the United States hardly deserves to be called by such a name. Of course with the favorable exceptions which exist in this, like in all things.

I shall not attempt, as it would neither be becoming to me, to criticise farming in general in the United States, but I believe that many of its branches, and especially such which require a little more care and study, are still carried on in a wasteful and unsystematic manner.

To use slang, such branches have not yet been brought down to the necessary fine point; one cause of this fact being due no doubt to the fact that our farmers are too much yet in the habit of scattering their forces, which naturally makes it impossible to acquire a higher degree of knowledge or experience in any one thing. Of course much may be learned by accident, but this is certainly not a sufficient or reliable teacher, especially not in the branch about which I am writing.

I know that many of our farmers are farming still in the way of those good old times when economy or "figuring" were really quite unnecessary, for, thanks to the few necessities of those days, they were always able to raise enough to keep themselves, and it made very little difference whether they wasted their time or the product of their labor—then there was no market for either a surplus of corn or the extra hogs which were raised.

With our present railway facilities and a handy home market at the door for nearly every farmer there is no more an excuse for wasting anything.

If the time has not already come, I am sure it will soon be here, when the farmer, if he would prosper, must learn to manage his business like every other business or industry has to be managed which aims at success.

I believe that proportionately but very few of our farmers know when or whether they are working with a profit, especially in any one item of their work.

That notwithstanding this many of them are still able to keep up or even yet work with profit, though only comparatively to what could and should be, is simply due to their cheaper land, a fresher soil, and some other conditions, which, however, will in time be equalized with those of the older countries.

What may be accomplished by system and economy is best shown by the several states of Europe, where the favorable conditions have long ceased to exist, and which feel terribly crowded by the dreaded and hated American competition, and yet they manage to keep up, at times even work with a little profit.

Do not also our own farmers begin to feel crowded in some items, such for instance as by the wheat of India, the wool of Australia, and the beef of South America, and ought they not in time prepare for the day when also a land will be discovered which may crowd their hogs?

NEED OF MORE KNOWLEDGE.

To return to my subject. While I know that much of what I have described can be of no use to the conditions of the swine industry in general in the United States, there is certainly great room for improvement in the manner of feeding and caring for the animals, and this far the Hungarian system ought to be adopted.

Though I also believe that the division of the industry as practiced here has certain advantages, I cannot expect that this part of the system should ever become popular in the United States, where the farmers prefer, and with right, to "manufacture" their corn into hogs of their own.

This part certainly belongs to farming, and farmers are therefore also entitled to the profits of the manipulation. But I would warn them against the undertaking unless they are in every way equipped, which mainly means to include also that a thorough knowledge of the nature, physically, of the swine should be possessed of, so that every one of its requirements and ailments may be promptly understood.

Here in Hungary it would be deemed certain financial suicide for any one to venture largely into the business in either of its branches without possessing such knowledge.

The hog is certainly a hog the world over, and, as also natural history teaches, it is certainly a land animal. Here at any rate it is looked at and treated as such, while the treatment it generally receives in the United States would incline one more to believe that it is amphibious and to belong at least to the species of mud-turtles; at any rate I have myself seen some herds of swine in the west which were hard to distinguish from moving masses of mud, and were they to see how comfortably their Hungarian cousins are situated they would be full of envy.

Not to wean the American hog too suddenly from old habits, let him enjoy an occasional "wallow" and let him bathe all he likes to, but in the main keep him clean and in dry quarters; and since, if I remember rightly, the American animal is not heavily coated, let him, as common sense also teaches, be properly housed and protected against the extremes of hot and cold weather, for a healthy condition is most certainly the first basis of this as well as of any other industry if it would be carried on with satisfaction and success.

At any rate, and as I have myself observed, the greatest importance is placed upon this part of the work of the Hungarian swine industry.

IMPROVED FEEDING.

The details given as to feeding need no comments of mine; our farmers ought to understand these items better than I do. I will only add my opinion that the practice here of feeding much ground food to

animals which are deprived of necessary exercise is but rational and ought to be adopted by our farmers if not already done so.

The common way of giving "corn in the ear" ought to be abandoned any way, if for nothing else than to stop the waste caused thereby; the geese and ducks which are kindly permitted "to run with the hogs," to grow fat, can certainly not dig up all the grains of corn which have been tramped into the mud, another reason also why the feeding ground ought to be paved, and many grains are left and wasted on the cob.

All places where the fattening of swine is undertaken should be supplied with the necessary motive power, be it steam, wind, horse, or meat power, to prepare the grain into the desired shape, and where there are no water-works or running water, to supply the much demanded clean and fresh water.

Invention has done so much in this direction that a number of some shape is at the command of everybody. To those who "think" that they cannot afford such outlay, I will say that it is all the worse for them to think so, for they can certainly still less afford to carry on the business, to whatever extent, without all that is necessary.

I believe, also, that one advantage may be gained by the country at large, if a correct system is adopted in the gradual "building up" of the hog.

The meat of thus produced animals will become more compact and of finer grain than that of animals which have been irregularly fed or without a thorough understanding of what the animal requires in all things.

The wealthier people here consume more pork than they do in the United States, where often, not from choice, the masses are the principal consumers; may this not be in consequence of a finer quality of the pork here, and may it therefore not be possible to increase home consumption in the United States, by a possible improvement of the pork there?

INSPECTION SYSTEM.

Though my report has been more especially addressed to "our farmers," I hope it may not be considered presumptuous in me if I finally take the liberty to dedicate a part of it also to the United States Government and to the several of our State governments. I would call the special attention of these to the manner in which the Government of Hungary watches and controls the sanitary part of the industry. I am sure that were a greater degree of control in this direction established in the United States, many cases of infection and of wider spread epidemics might often be avoided or prevented, thereby also saving millions of dollars to the country, besides creating the very important condition that thus all foreign Governments would be deprived of every moral pretense for placing an embargo upon the American hog.

Notwithstanding the great care taken in the swine industry of Hungary and the measures of sanitary control exercised by this Government in connection with it, the Hungarian hog has not always a smooth road before it, it often receives a shabby treatment at the hands of other Governments, as the American hog does; thus, for instance, is it often declared diseased by Germany and forbidden entrance there upon the slightest pretexts, though it is a public secret here that these prohibitions usually occur at the same time when also the swine market of Germany happens to be in a diseased condition.

This, of course, can be but poor consolation to the American hog, but who knows after all whether similar causes may not be found at the

bottom of all the past and present troubles of the much abused American hog.

As to the action of Hungary towards the American hog there are certainly volumes in the following figures: The prices of live hogs here in 1874 were about 12 cents per pound; competition by other countries gradually crowded this price down to $7\frac{3}{10}$ cents per pound in 1880. At this time the Hungarian hog was placed under protection, a little later especially against America, by prohibitive measures, and as a consequence the prices promptly revived and advanced to $11\frac{1}{10}$ cents in 1883.

This course was followed by overproduction, and now the price is down again to $7\frac{3}{10}$ cents per pound.

HENRY STERNE,
Consul.

UNITED STATES CONSULATE,
Buda-Pesth, April 25, 1886.

GERMANY.

REPORT OF CONSUL MONAGHAN ON AMERICAN HOG PRODUCTS IN GERMANY.

In connection with the import and export of slaughtered meats between the United States and the German Empire, when butchers, persons, and business men are asked for the underlying causes of the opposition of the German Government to American pork and hog products, meats, &c., they invariably give the same answers as the members of boards of trade and chambers of commerce.

You are told that "there may be many causes, political, economic, sanitary." "It is a bait thrown out to the agrarian population." "It helps the Government in satisfying their supposed, for they dare not make any, claims." "It keeps down murmuring." "It is the outgrowth of scholastic professorial socialism;" a governmental, if not logical, way of meeting that constant irritant in European social-political life, radical or destructive socialism. "It keeps money at home that would otherwise go to America," the last place God made, in the estimation of European loyal royalists. "It is a preventive of that dreadful disease," trichinosis. The first is the real cause, since the second and all the others are merely forced corollaries of the first.

The disease theory is a political expedient, and like most such has no foundation in fact.

Since 1871 Germany has incorporated into her industrial creed the motto, "All Germany for the Germans, and as much of the outside world as we can get." Apologists for the disease theory tell you that "American" producers and packers are too careless; that the system of inspection is not strict "enough," &c.

Your producers in the West let their hogs wander about, eating what they please, even dead bodies of rats, dogs, and other carrion. Your packers become careless after a time in the selection of their meats, the quality in some cases descending, after the first invoice, in a scale of arithmetical progression, until the disgusted buyers say, "No more." Your system of inspection doesn't amount to a row of pins. Give us the assurance that strict, faithful, thorough inspection will be instituted and carried out, and we will talk of removing the restrictions.

The meat food of the German peasantry and laboring classes—those of them that can afford to indulge the luxury—is pork; they seldom taste any other meat, their soups even being made from this.

The importance of the German hog industry can be partially understood from a glance at the following price-list for meats :

	Cents per pound.
Oxen flesh	16
Round steak	14½
Cow flesh	14½
Calf flesh	14½
Mutton	16
Pork	15

The importance to us of the German meat trade will be understood by a few moments reference to the following statistics prepared for me by Dr. Landgraf, secretary of the Mannheim Chamber of Commerce, a gentleman whose courteous kindness and patience I most cheerfully acknowledge:

Import and export of slaughtered meats, fresh and preserved, from and to the United States of America.

Year.	Import.			Export.		
	Direct.	Via Bremen.	Via Hamburg.	Direct.	Via Bremen.	Via Hamburg.
	Kilograms.	Kilograms.	Kilograms.	Kilograms.	Kilograms.	Kilograms.
1880.....	8,600,500	5,033,100	3,955,000	1,100	415,900	2,882,500
1881.....	48,800	182,800	170,100	800	15,900	153,800
1882.....	7,800	15,200	165,600	100	30,400	196,400
1883.....	40,000	16,200	185,100	300	19,900	237,800
1884.....	101,000	108,000	1,593,200	1,200	432,400	4,287,500
1885.....	400	7,100	112,600	.....	22,700	444,900

An examination of the tables presents the fact that in all the years succeeding 1880 Germany imported from the United States only 2,753,400 kilograms in aggregate, while for the year 1880 alone the import was 17,608,000 kilograms, or about six times as much for one year as for five years combined.

Again we notice a remarkable increase in Germany's export to the United States, reaching nearly 5,000,000 in 1884.

This much is said of slaughtered meats only.

The importance of the many other products, live stock, fats, tallow, lards, &c., constitute an important matter for study.

J. C. MONAGHAN,
Consul.

UNITED STATES CONSULATE,
Mannheim, April 19, 1886.

COLOGNE.

REPORT OF CONSUL WAMER ON SWINE INSPECTION IN PRUSSIA.

Dr. Eulenberg, in an official report on trichinæ-infected swine in Prussia, published in the "Vierteljahresschrift für gerichtliche Medicin," gives the number of swine examined during the year 1884 as 4,611,689, of which 2,624 were found to contain trichinæ. Besides, there

were 250 American hams and sides and other preparations of American hog meat that showed the presence of this germs of minute nematoid worms.

WM. D. WAMER,
Consul.

UNITED STATES CONSULATE,
Cologne, March 3, 1886.

SCOTLAND.

REPORT OF CONSUL UNDERWOOD ON AMERICAN MEATS IN GLASGOW.

Having noticed the marked difference between the prices quoted for American hams and bacon and those quoted for Irish and Scotch products, I applied to a well-known house, Messrs. Barclay & Brand, for information on the subject of preparing and shipping these articles, and I have been favored with their views, based upon a long experience in the business and upon an intimate knowledge of the wants and tastes of this community. I have transcribed and herewith send their reply to my questions. American hog products are largely consumed in Scotch markets.

The increase has been very great in late years. No doubt the cheapness of the articles has stimulated the consumption, but the improvement in quality from better breeds of hogs and from corn-feeding has greatly helped to develop the trade.

The old prejudices against American meats are being removed; and this might be greatly hastened by more care and attention to the wants and tastes of consumers.

The taste of the British public has become more fastidious as to the condition in which bacon and hams are presented, and it is now almost impossible at anything near relative values to place meats that are salt or overcured, or that are not cut and trimmed with symmetry and neatness. The great desiderata now in all classes of meat are freshness and quality.

HOME SUPPLY AND AMERICAN MEATS.

The chief competition here with American meats comes from the supply of Irish and home-fed hogs. In Ayrshire, where cheese is largely made by farmers, pigs are reared in considerable numbers; and as soon as they have size and condition they are sent to the market. From the north of Ireland, too, there is a steady supply for many months in the year—pretty heavy from September on to Christmas.

This pork (from Scotch and Irish farms) comes to our market mostly in clear sides; sometimes the hams are shipped, but generally Irish curers take these for smoking, but the meat is shipped immediately after killing, and so it reaches the shopkeeper as nearly *fresh* as it can safely be.

It will be seen from this at what disadvantage American meats come to the British consumer, after having been cured in the West and lying in salt from twenty-one to twenty-eight days during the transit. Meats so treated must be far too salt, and cannot be at all in such condition as to color and natural juices as the Irish and Scotch fresh bacon.

NEEDS OF THE MARKET.

The main object of the American curer, if he wishes to place his meats on the market here so as to compare favorably with home supplies, should be to devise means to cure his meats only to the extent of keeping them sound until they arrive. But meat must be perfectly sound. Any latent heat will develop in transit, and the meat may come here sour, or even tainted. Still, it may be *mildly* cured, and arrive here as it should be.

Boxes should not be filled up with coarse, strong salt. In summer, of course, great care ought to be exercised.

At present our market wants are poorly supplied in this particular. Strong meats, either from America or here, are avoided. A quick dispatch after killing and a quick sale to consumers will enable importers to meet the competition of home supplies.

The most suitable cuts of bacon for this market are long, clear middles, Irish cut middles; hog, in four quarters and boned, and the Cumberland cut. The lighter the average weight the better. Heavy averages are not easily sold, and not desirable to ship in quantity. Hams sell freely; the long cut finding the largest outlet. Short cuts, Manchester and Preston cut, and Staffordshire cut, are sold, but never as well as the long cut. The average weights in long cut hams, most suitable for the trade, are 14 to 16, 16 to 18, 18 to 20, and 20 to 22 pounds.

There is a special large trade in heavier averages for boning, especially when cheap enough to be comparatively better value than the Irish bacon.

They *must* be mild-cured for this purpose, but the particular cut does not matter much.

The lighter averages are nearly all used for smoking, and in these the long cut is always preferred. In fact, it is only now and then, when long cuts are scarce and dear and the others are cheaper, that they are used for smoking.

Hams for smoking should be uniform in size—that is to say, boxes should be filled with hams all as near one size and weight as possible.

Many curers huddle together large and small hams, and bring out in a lot an average which misleads. Hams should never be packed of extreme weights to make an average.

Any curer who does this places his brands at a great disadvantage. In first-class brands no blemished or bruised hams should be packed.

There is a good demand for boning, for blemished and bruised hams—if otherwise sound—at their value, to suit a cheaper retail trade.

American smoked meats do not generally find ready sale here. Consumers do not like meats heavily smoked (any more than heavily salted). They prefer them smoked as lightly as possible, and they like to use them as soon after smoking as may be.

The packing of smoked meats for transit is against the trade. Ham-curers here furnish the hams lightly smoked, and in nice clean shape, just like the famous Irish smoked hams.

Shoulders are freely sold here, especially when the price admits of their being offered, boned and rolled, to shopkeepers at or under 28s.* per cwt.

When the import price is at 20s. per cwt., the sale naturally increases. The desirable weights are 14 to 16 pounds and 15 to 18 pounds.

Meats generally suit best when dry salt cured, but a steady trade is done in long clear middles in pickle, packed in barrels. Care must be

* \$6.32 per 100 pounds.

taken that the pickle is not too strong. Such pickle, as is used for mess pork, would render the meat much too salt on its arrival.

The troubles have been with this mode of packing either that the meat arrives too salt or too fresh. There is a happy medium, in which, while the meat is kept perfectly sound, it comes to hand mild in flavor, and in nice bright color and condition. In this state it is preferred to dry-salted meats.

Hams for bouing purposes may be similarly shipped in pickle in barrels.

In regard to salt pork, the grade sold most largely here is prime mess. This article is for ship's use.

Sugar-cured meats have never met with a free sale here, salt-cured being always preferred.

Borax-cured hams have been coming lately. The trouble is with their condition. If rightly handled by packers, this style of preserving meat may grow into favor.

As before suggested, the style of cutting and trimming the pieces is of the utmost importance. No show of meats anywhere is more attractive, in form, color, and cleanliness, than the display in Glasgow shops.

Lard is salable in tierces, and in packages of 28 and 50 pounds. The object should be to give a good package, clean and well made. The lard should be free from singeing (or burning), perfectly sweet, pure, and unpressed.

When American bacon and hams are produced equal in desired qualities to those of Irish and Scotch make, and their reputation is established in this market, they will command far higher prices than at present (in my judgment).

FRANCIS H. UNDERWOOD,
Consul.

UNITED STATES CONSULATE,
Glasgow, April 20, 1886.

THE GLASS-BOTTLE TRADE OF YORKSHIRE.

REPORT OF CONSUL WIGFALL.

From the quarterly report of the glass-bottle makers of Yorkshire United Trade Protection Society for the quarter ending November 30, 1885, recently issued, I obtain some items which may be of interest to the trade in the United States.*

The report shows an income for the quarter of \$4,500, and an expenditure of \$6,470, leaving a deficit for the quarter of \$1,970. The corresponding quarter of the preceding year gave, income, \$3,705, and expenditure, \$6,185, or deficit, \$2,480. There was paid this quarter to members out of employment, \$4,730, against \$4,400 same quarter of 1884—increase this quarter, \$330; paid for superannuation, benevolent grants, funerals, and members' widows, \$1,200, this quarter, against \$1,205 in 1884; administration (including all officials), \$310, against \$280 for same quarter last year; increase of total expenditure this quarter over same quarter 1884, \$285.

The amount of "donations," or benefits, paid during the winter months is considered to be a heavy burden to the society. The total number

*Twelve branches are embraced by the report. In converting sterling into Federal currency I have omitted fractions and taken £1 sterling as equivalent to \$5.

of donations during the quarter this year is 2,113, or, in money value, \$4,725; the difference between this sum and the amount stated above, viz, \$5, being for railway fares in sending members to situations. The annexed table gives the details for the different branches, showing the relative amounts of donations paid for slack trade, and for "fires out" for repairs, &c.

Donations paid for quarter ending November 30, 1885.

Branches.	Houses laid in.	Weeks' benefit.	Fires out for repairs, &c.	Weeks' benefit.	Total amount paid.	Total weeks' benefit.
	£. s. d.		£. s. d.		£. s. d.	
Castleford	241 7 0	540	57 12 0	129	298 19 0	669
Swinton	75 8 0	167	13 19 0	31	89 2 0	198
Hunslet	44 17 0	100	22 1 0	49	66 18 0	149
Thornhill Lees	167 17 0	376	12 3 0	27	180 0 0	403
Ferrybridge	63 3 0	145	11 14 0	26	74 17 0	171
Wakefield	40 10 0	90	44 11 0	99	85 1 0	189
Barnsley	71 2 0	158	13 19 0	31	85 1 0	189
Conisbro'	26 11 0	59	25 13 0	57	52 4 0	116
Maebro'						
Kilnhurst						
Shirehampton	3 3 0	7			3 3 0	7
Blaydon-on-Tyne	10 18 0	2	9 0 0	20	9 18 0	22
Total	734 11 0	1,644	210 12 0	489	945 3 0	2,113

YEARLY INCOME AND EXPENDITURE.

The total income of the central society for the year ending November 30, 1885, is \$20,280, and the expenditure, \$18,720, showing a surplus for the year of \$1,560.

For the year ending December 29, 1884, income was \$20,655, expenditure \$19,955, surplus \$700, thus making a better showing this year by \$860 as to surplus. Amount paid to members out of work in 1884 was \$13,330, against \$12,310 for 1885, a decrease this year of \$1,020 for the year.

Superannuation, benevolent grants, funerals, and members' widows:

1884	\$3,980
1885	3,475

Decrease, 1885 505

Grants to other trades and to philanthropic institutions:

1884	\$445
1885	1,105

Increase, 1885 660

Of the expenditure under the last-named heading, amounting for the two years to \$1,550, the sum of \$1,330 was paid for trade-union protection purposes. Of the total expenditure for the two years, viz, \$38,675, there has been paid \$25,645, as the report states:

To members out of work from circumstances over which they had no control, circumstances entirely free from trade disputes with the employers, circumstances which might be described as purely depression of trade, excepting where the employers may have discharged workmen in order to advance apprentices.

The society's balance November 30, 1885, as against December 29, 1884, shows an increase of \$1,560; but in this connection the fact must be taken into account that the number of journeymen out of employment shows an increase this year of 129, or 432 against 303, or 42 per cent. as of those unemployed November 30, 1884. I understand that the

number of unemployed has since still further increased. Of this number there were receiving out-of-work allowance—

	Members.
November 30, 1885	255
December 29, 1884.....	141
Increase	114

Number of journeymen members.

November 30, 1885	1,349
December 29, 1884.....	1,232
Increase	117

The annexed table gives details of condition of trade, &c., at the twelve branches reported:

Abstract trade returns of the branches November 30, 1885.

Branches.	Accounts written off.		Members.			State of trade.	Glass bottle houses.		
	Excluded.	Deceased.	Apprentices and youths.	Journeymen.	Total.		Working.	Standing.	Total.
Castleford	1	1	81	507	588	Dull	19	13	32
Swinton			18	112	125	Moderate	8	3	11
Hunslet		1	18	91	109	do	5	4	9
Thornhill Lees	1		12	146	158	do	4	3	13
Ferrybridge		1	19	74	93	Bad	1	7	8
Wakefield			23	77	100	do	2	3	4
Barnsley, Wombwell, & Stairfoot	2		24	147	171	Moderate	1	11	12
Conisbro'	1		21	94	115	Bad	3	1	4
Masbro'		1	3	20	23	Moderate	1	1	2
Kilnhurst			2	8	10	do	1		1
Shirehampton	2		6	27	33	Bad	1		1
Blaydon-on-Tyne			7	46	53	do	4		4
Total	7	4	229	1,349	1,578		50	51	101

Branches.	Members out of employment.					Members left the trade or in other districts, and paying per 32d rule.	Members receiving trade benefits.			Members receiving superannuation benefit.		
	Bottle-makers.	Blowers.	Gatherers and blowers.	Gatherers.	Total.		Out of work.	Strike and lock-out.	Total.	5s. per week.	4s. per week.	3s. per week.
Castleford	56	49	23	79	207	27	141		141	4	2	9
Swinton	7	7	7	4	25	1	18		18		1	1
Hunslet	6	8	1	12	27	4	15		15	3		3
Thornhill Lees	11	29	6	14	51	4	36		36		4	1
Ferrybridge	8	17	4	9	38	1	28		28			
Wakefield	4	8	2	6	20	4						
Barnsley, Wombwell, & Stairfoot	8	9	6		23	1	16		16		1	1
Conisbro'	9	5	10	6	30	1						
Masbro'	1	1	1	2	5							
Kilnhurst		1	1		2							
Shirehampton				1	1	2						
Blaydon-on-Tyne	1	2	1		4		1		1			1
Total	111	136	61	133	432	45	255		255	7	8	13

This table shows 432 members out-of-work, and 45 who are in other districts, or not working at the trade. It also shows 255 members receiving out-of-work allowance, and 28 superannuated allowance.

As further bearing on the trade of the Yorkshire district, I quote from the report:

We beg to differ from Mr. Good, with regard to the Lancashire and Yorkshire districts not being affected by foreign competition, which, he supposes, is because "Yorkshire is a miscellaneous district, and that the foreigner has not yet gone into its trade, and that Lancashire is close to the principal market of this country—Liverpool." The fact of the case is, that London is the principal market of the manufactures of the Yorkshire district, and it is affected in proportion to the extent that the Lancashire district develops the pale or bright glass trade, including the various classes of bottles which have originated in Yorkshire, and of which manufactures Yorkshire has been up to a recent period not only its *principal* seat, but also almost its *sole* seat of manufactures. Had Lancashire continued to confine its manufactures to dark or black glass, such as wine and beer bottles, &c., the Yorkshire district would doubtless have been in a flourishing condition, and the Lancashire district would have been as depressed, perhaps, as the North of England and Scotland are. But the Lancashire district now produces a large quantity of Yorkshire specialties, and the consequence is, that furnaces are standing, and a large percentage of the Yorkshire men are thrown into other labor markets.

Mr. Storey considers that one of the most practical points raised is the one relative to the French taking advantage of the uniformity of the tariff on wines imported from France in bottles instead of casks. This is a matter that was taken up by the Yorkshire manufacturers several years ago, and urged upon the attention of the inland revenue officials, on the ground of throwing a large number of the work-people, at their respective factories, out of employment—when some modifications were obtained. If bottles were used only once, and for one purpose only, perhaps all the glass-houses in the United Kingdom would be kept going. But this "is a consummation" which, if "devoutly to be wished," is never likely to be obtained. Just imagine all the aerated water bottles, especially the patents, some of which have commanded prices amounting to 48s. per gross (which are now offered at 18s.), being used only for one filling.

A special American correspondent states that the aerated water-bottle difficulty is a universal one in the trade, and is exactly similar in its features both in England and in America, and that the bottlers in both countries are agreed on the advisability of forming organizations for mutual protection. Opinions are divided in America on the *modus operandi*. But this applies especially to the practice of manufacturers using each others' bottles. He states that it is the system throughout the world for manufacturers of proprietary medicines, pickles, sauces, liquors, ink, &c., to give away the bottles containing the goods, because the greater comparative cost of the contents permits of the loss of the bottles as a natural expense of the line of business in which they are used. And that in these "lines of trade the bottles are filled but once before they are lost to the manufacturer." But this is only correct in a limited sense. They may be lost to the particular manufacturer who originally fills them; nevertheless, it is a fact that these kinds of bottles are bought up largely, excepting, perhaps, "inks," which are more than made up for by other kinds—expressed by "&c." It is a fact beyond dispute that bottles, especially liquor bottles, have been collected for a long time, say thirty years; and that there are those in the trade at the present time who do a large business in them, and who have extensive premises, and who have amassed large fortunes and purchased large estates.

The repurchase and reuse of glass bottles can be no more prevented than can be prevented the buying and selling of old or second-hand clothes. There is no doubt that the high prices obtained for glass bottles during the unparalleled inflation of trade in the quinquennial period (1870-'75) gave an impetus to the collection of old bottles for reuse by many persons who have made a business of it. But it must be remembered that while we, as workmen, complain of foreign bottles being bought up and reused and re-exported, that amongst others English users and merchants have recourse to that practice, and that they do it in order to save expense and increase their profits. Foreign bottles are bought up and refilled with other articles of produce than "beer" and then resold or exported.

The following figures are also from the report; the extracts given relating, as will be seen, to general trade conditions in Germany in 1882, 1883, and 1884, with a partial allusion to the glass trade:

And we have on the authority of Mr. Joseph Jonas, of the Continental Works, Attercliffe, Sheffield, that Sheffield's most formidable competitor is Germany, and yet it is shown by a complete list of the large manufacturing companies whose shares are daily quoted on the principal German stock exchange, that there are upwards of 80 in number; the aggregate capital which they represent is £21,600,000. He has taken

the trouble to analyze the results of the working of these concerns, which are as follows:

	1882.	1883.	1884.	Capital invested in 1884.
Companies whose dividends were—				£.
Nil	29	89	42	6,400,000
Not exceeding 1 per cent	3	1	6	2,600,000
Not exceeding 2 per cent	3	6	4	3,100,000
Not exceeding 3 per cent	8	4	3	800,000
Not exceeding 4 per cent	10	7	8	1,750,000
5 per cent and over	31	27	24	6,950,000
Totals	84	84	82	21,600,000

Bad as is the state of things shown by these figures, they do not reveal the worst feature of all, namely, the large amount of capital which has been actually lost or written off, partly in the case of the above companies, and partly in that of companies which have ceased to exist. These results have been arrived at from examination of public records, which, of course, are not available in the case of private concerns; but no doubt the latter are suffering in a like degree.

A similar state of things exists in the glass trade. According to the yearly report of the Dantzic Chamber of Commerce for 1884, the glass works at Legan, Dantzic, was partially closed. These works in 1883 produced 3,104,000 bottles; in 1884, 2,831,700. In 1883 they exported 1,880,000 bottles; in 1884, 1,675,000. The value for 1883 was 167,000 marks (equal to 1s.), and in 1884 156,675 marks. The cause of the stoppage of part of these works is bad trade.

Annexed tables and correspondence relate to the United Kingdom of Great Britain and Ireland.

Imports and exports of glass and glass manufactures.

IMPORTS.

Articles.	Quantities.			Value.		
	1883.	1884.	1885.	1883.	1884.	1885.
Glass:	<i>Owts.</i>	<i>Owts.</i>	<i>Owts.</i>			
Window and German sheet, including cylinders	683,739	744,935	788,249	£537,920	£517,262	£535,586
Plate, silvered or not	84,766	87,608	90,767	179,482	167,977	186,685
Manufactures, unenumerated	610,542	612,705	636,162	891,175	934,285	910,473
Total	1,379,047	1,445,248	1,524,178	1,608,577	1,619,524	1,632,744

EXPORTS.

Glass:						
Plate, rough or silvered, including looking-glasses	3,667,243	3,750,458	3,881,913	261,358	274,239	246,196
Flint of all kinds, and manufactures thereof	151,906	128,351	131,061	338,947	299,360	279,422
Bottles, and manufactures of green or common glass	769,080	744,980	731,890	356,519	362,927	351,931
Other kinds, unenumerated	144,904	141,074	107,311	127,582	124,319	89,317
Total	4,733,132	4,764,863	4,852,775	1,084,406	1,050,845	966,866

Quantities and value of unenumerated glass manufactures imported into the United Kingdom from foreign countries in the year 1884.

Whence imported.	Quantity.	Value.
	<i>Cwts.</i>	
Sweden	60,389	£28,781
Norway	1,933	3,130
Germany	258,374	334,148
Holland	41,204	81,209
Belgium	183,550	306,616
France	61,953	163,838
United States of America	5,107	11,097
Other countries	891	2,230
Total	613,360	963,039

Quantities and value of flint glass, including bottles, common glass bottles, and other unenumerated glass manufactures (produce and manufacture of the United Kingdom) exported from the United Kingdom to the undermentioned foreign countries in the year 1884.

Exported to—	Flint, plain, cut, or ornamented glass (including bottles and other manufactures of flint glass).		Common bottles.		Other glass manufactures.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	<i>Cwts.</i>		<i>Cwts.</i>		<i>Cwts.</i>	
Russia	2,462	£5,237				
Sweden and Norway					5,147	£3,008
Denmark					12,256	8,237
Germany	3,484	9,480			9,558	6,850
France	4,517	8,622			10,416	11,571
Italy					6,025	4,412
Egypt			5,858	£2,876		
Western Africa (foreign)	929	3,852				
China			7,226	3,054		
Japan			6,396	3,062		
United States:						
Atlantic	4,365	35,006	85,464	39,363	26,867	26,986
Pacific			7,098	3,197		
Foreign West Indies			20,850	10,522		
United State of Colombia			7,546	3,846		
Chili	2,012	5,241				
Brazil	3,568	7,884	21,947	10,580		
Argentine Republic	2,006	5,555	12,255	5,784		
Channel Islands	1,380	5,389			3,558	2,808
Western Africa (British)	1,181	4,820				
British Possessions in South Africa	6,112	9,615	30,285	16,016	5,748	6,052
British India:						
Bombay and Scinde	8,374	18,792	17,239	7,650		
Madras	1,672	3,489	5,780	2,802		
Bengal and Burmah	10,630	25,458	39,921	17,047		
Straits Settlements	1,840	4,390	10,836	5,242		
Ceylon			4,756	2,083		
Hong-Kong			7,533	3,540		
Australasia	50,567	90,411	312,068	147,363	28,976	25,615
British North America	2,772	8,577	52,227	20,781	9,036	8,630
British West India islands and British Guiana	8,965	6,879	50,029	22,108		
Other countries	17,820	42,922	53,809	25,980	23,009	20,314
Total	128,486	301,569	759,093	352,805	141,189	134,482

Customs duties levied on glass bottles, imported into the under-mentioned European countries and the United States.

Countries.	Tariff classification.	Tariff rates of duty.	English equivalent.
Russia	Manufacturers of green bottle glass, plain, with molded patterns or letters, but not cut or ground. NOTE.—Wine bottles are admitted duty free at the ports of the Black Sea and Sea of Azof, and at the custom-houses of the Bessarabian frontier.	55 copecks per pood* ...	5s. 5d. per cwt.
Sweden	Glass bottles, full or empty..... Bowls, jars, bottles, flasks entirely uncut. Jars, flasks, with cut stoppers, not otherwise cut.	1 öre each 2 öre per kilogram..... 10 öre per kilogram.....	½d. each. 1s. 1½d. per cwt. 5s. 8d. per cwt.
Norway	Common bottles or flasks of glass not cut or ground.	Free	Free.
Denmark.....	Glass, unpolished, in sheets or panes, window glass, patent or skylight glass, common green or brown hollowware, as bottles or retorts, and rough unpolished plate glass.	38½ öre per pund.....	3s. 6½d. per cwt.
Germany.....	(a.) Green and other common glass, blown glass, neither molded, cut, nor ground, with common basket covering. (b.) White hollow glass, not figured, cut, ground, nor molded, but with cut or ground stoppers, bottoms, or rims.	8 marks per 100 kilograms. 8 marks per 100 kilograms, gross weight.	1s. 6½d. per cwt. 4s. ¾d. per cwt., gross.
Holland	Glass and glasswares, all kinds .. NOTE.—Wine bottles may be imported free of duty, in bond, to be filled for re-exportation.	5 per cent. ad valorem..	5 per cent. ad valorem.
Belgium.....	Common bottles, &c.....	1 franc per 100 kilograms	4½d. per cwt.
France	Bottles, full or empty, all kinds...	3 francs per 100 kilograms	1s. 2½d. per cwt.
Portugal	Vessels of glass, black or green...	5.45 reis per kilogram...	1s. 3d. per cwt.
Spain	Common hollowwares	8 pesetas per 100 kilograms.	3s. 3d. per cwt.
Italy	Bottles, common	3 lire per 100 kilograms.	2s. 4½d. per 100.
Austria	Demijohns..... Hollowwares of natural colored glass, but not white nor pressed, not polished, figured, nor ground. White hollow glass, transparent, not figured, pressed, ground nor polished; and hollow glass of natural color, or white with ground stoppers, bottoms, or rims.	3 lire per 100 kilograms. 2 florins per 100 kilograms 4 florins per 100 kilograms	1s. 2½d. per cwt. 2s. ½d. per cwt. 4s. ¾d. per cwt.
Switzerland	Common wine bottles.....	1.50 francs per 100 kilograms.	7½d. per cwt.
Greece	Common green or other bottles, including demijohns. Bottles of white glass	6 lep. per 6 ke..... 20 lep. per 6 ke.....	1s. 1½d. per cwt. 6s. 4½d. per cwt.
Roumania	Bottles of cut glass	30 lep. per 6 ke.....	16s. per cwt.
	Very common glass hollowwares, green, black, and yellow, of natural color, not molded, polished, or ground. Common, i. e., white hollowwares, plain, not polished, ground, or molded, with or without partially polished or ground stoppers.	4 lei. per 100 kilograms..... 6.50 lei. per 100 kilograms	1s. 7½d. per cwt. 2s. 7½d. per cwt.
Turkey	Glass and glasswares, all kinds...	8 per cent. ad valorem..	8 per cent. ad valorem.
United States	Green and colored glass bottles, phials, demijohns, and carboys, and other plain and green and colored bottle glass, not cut, engraved, or printed. Flint and lime glass bottles, phials and other flint or lime glassware.	1 cent per pound..... 40 per cent. ad valorem.	4s. 8d. per cwt. 40 per cent. ad valorem.

* With an addition of 10 per cent. on each rouble of duty leviable.

From various statements contained in the report, consisting in large part of replies to the inquiries made by the royal commission on the depression of trade, I gather the following view of the present condition of the glass-bottle and related industries in different portions of the United Kingdom, which will, perhaps, not be deemed impertinent in this connection.

BARNSELEY.

Home market takes two-thirds of the production as regards the glass-bottle trade; foreign markets one-third, chiefly to Australia, New Zealand, Cape, South America, and India. Considering the years 1865 to 1880, the trade has been more affected during the past five years than any previous quinquennial period; gross volume considerably less, but more labor employed.

BELFAST.

Aerated water trade, one-third foreign, one-third home, and one third local. Trade 1865 to 1870 comparatively small; attained largest dimensions 1870 to 1875, and is now steady; not now fairly to be described as "depressed." Course in the immediate future increasing. Hostile tariffs interfere with exports. Complaint of railway combinations hindering home trade. Aerated beverages leaving Belfast port direct in 1885, said to be 700 ton less than in 1884. Each ton represents 80 dozens; hence diminution is 56,000 dozens. Against this decrease of aerated waters the whisky trade is said have to diminished by 1,100 tons.

BIRMINGHAM.

One of the principal seats of the flint and sheet-glass industries of the United Kingdom. Employs more than 300 artisans, members of the Flint Glass Makers' Society.

BRISTOL.

Has only one glass-bottle manufactory in the district.

GLASGOW.

More affected by foreign competition than any other district making glass bottles. Previous to 1871 most of the Glasgow glass-bottle works were kept in full operation for Glasgow bottle users, who now get nearly all their supplies from abroad, and the factories are now nearly all standing. Foreign workmen also have been introduced.

LEEDS.

Not less than six manufactories in the parish of Hunslet, including bottle and medicinal manufactures. No reply to the commission.

LEITH.

Factories closed some years since.

PORTOBELLO.

Present condition very unsatisfactory; bitter complaints of foreign competition.

LIVERPOOL.

Glass industry called extinct. (Note.—This presumably refers to Liverpool proper only; not including the immediate neighborhood.)

MANCHESTER.

Very extensive flint-glass manufactories; no reply to royal commission. Those interested allege that imports of foreign flint glass are increasing, and the exports of English flint glass are decreasing. Manchester employs 300 artisans at furnace work in flint-glass working.

STOURBRIDGE.

No reply to royal commission. Greatest center of flint-glass trade. Employs 400 artisans. Stourbridge, Manchester, and Birmingham the three principal seats of the flint-glass industry in the United Kingdom.

SUNDERLAND.

The following extract is from the Newcastle Daily Chronicle of October 22, 1885:

[Decline of the glass-bottle trade of the North of England and foreign competition.—The decline of the local bottle trade.]

The bottle trade, which at one time ranked as an industry of no mean importance, has during the past ten years undergone so marked a change for the worse that, contrasted with the beginning of the period mentioned, there is now only about a third of the business being done. It is only a few days ago since the men accepted another reduction of wages; and, in face of the keen competition from abroad, which is the sole cause of the downward tendency in this country, there was probably no other alternative but for the men to yield to the demand of their employer. In giving a retrospect of the trade it may be of interest to commence at the year 1854. At that period the ordinary wages of the bottle hands were: Finishers, £1 10s.; blowers, £1 6s.; gatherers, £1 3s., with coals allowed. For this rate of pay they turned out 63 dozen pints or quarts, which constituted a day's work; and they were paid 3s. 6d. per gross for all overwork. No notable change took place in the trade until the latter end of 1872, when an advance of 2s. 6d. per week in wages was ceded to the workmen; and this went on up to April, 1876, when a reduction of 2s. 6d. was submitted to, bringing the men back to their old rate of pay. Two years afterwards they suffered a decrease of 2s. per week and 2d. per gross off the overwork, and this condition of affairs remained till August, 1882, when an advance was applied for.

The masters declined to listen to the demand, with the result that there ensued a strike, which lasted for ten months. The employers subsequently gave way, and an increase of 2s. was granted; and the men also again received 3s. 6d. per gross on overwork. At this rate of pay the men continued to work up to November, 1883, when another rearrangement of prices was effected, the men accepting 2s. off the wages and 2d. off the gross for overwork; but at this date the number of pints to be manufactured was raised to 70 dozens per day instead of 63 dozens—a change in the trade never hitherto attempted; and this went on till last week, when the bottle hands agreed to a reduction of 1s. on the wages and 7½d. per gross on the overwork. During the past ten years the men have submitted to a reduction of 5s. 6d. on the ordinary wages and on the overwork; the finishers have lost 5d. per gross; and the gatherers and blowers, 4d. on black metal; or, to take the average week's work of ten years ago, of 20 gross overwork, the aggregate reductions effected amount to 13s. 10d. per week off the finishers and 10s. 2d. off the gatherers and blowers. In addition to the above, the men who made light metal bottles have suffered a further reduction as follows: Finishers, 7s. 6d.; blowers and gatherers, 5s.; making the total reduction to a finisher of light metal of £1 1s. 4d., and the blower and gatherer, 15s. 2d.

This gives briefly the chequered career of this particular branch of trade so far as the wages are concerned. The year 1874, we understand, was the most prosperous one for bottle-making, and at that time there were 56 "houses" in operation in the North of England, and these were located on the Tyne, Wear, Tees, and Seaham Harbor. The number of bottle hands then employed was about 600, but since 1876, when foreign competition began to make itself felt, trade so rapidly diminished that there are now only 22 "houses" working, employing from 220 to 230 men. To quote the words of a well-known employer of labor in the bottle trade, who spoke at a recent meeting of the Sunderland Chamber of Commerce, "Taking the wages paid formerly at the 22 idle bottle-houses in Sunderland at £60 each per week, that amounts to £1,320, or an annual loss of wages in Sunderland alone of between £50,000 and £60,000. Taking, he added, the whole trade, viz, including the North of England Association, the weekly loss in wages caused by the stoppage of bottle-houses was £1,860, and it amounted to an annual loss of between £90,000 and £100,000." There is a greater demand for bottles than ever there was, but the cost of labor on the Continent being comparatively cheap, the bottle-makers in the North of England are unable to compete with them; and hence the extreme depression at present prevailing in the trade in this district.

The Sunderland Daily Echo reports a meeting of the glass-makers of Ayre's Quay and District, November 11, 1885, and I give extracts from some of the statements:

In the year 1845 there was imported into England 22,453 hundredweights of sheet window glass, valued at £15,717. He would not go into every year, but give the

amounts imported one year out of every successive ten. In 1855 there were imported 25,439 hundredweights of sheet glass, valued at £17,807; in 1865, 264,056, at £184,839; in 1875, 570,195, at £399,136; and in ten months of the present year there had been imported 657,142 hundredweights, the value of which was £443,363. Was it not a shame that such a large amount as £443,363 should have been paid for foreign labor, when the men of our own country were walking the streets?

Mr. Good, on behalf of the bottle trade, said that unless some alterations were made in the bottle trade it would in a short time pass away never to return. The number of "holes" had decreased since 1873 from 214 to 73 in this district. In 1873 employment was given to at least 600 people—blowers, finishers and gatherers—and in addition about 400 boys, women, or men were connected with the trade. At the present time they had only about 230 employed, so that they would see that this particular trade—the bottle trade—was dwindling away. [Applause.] In Scotland the trade had considerably fallen off. Speaking of the reductions in their wages, Mr. Good said that they had to suffer these from time to time to enable their employers to keep pace with the foreigner. About ten years ago they snapped their fingers at the foreigner, but he had now bit them, and very sorely.

They were at present working for 40 per cent. less than they were before, and yet they were not able to keep their ground. Several so-called remedies had been suggested to them. One was that they should introduce a fresh system of working. But what was the use? They could make bottles now twice as quickly as the foreigner could, yet they were not able to compete with him. [A voice: "Why?"] That was what they wanted to know. [Laughter.] In Norway and Sweden the glass-makers had no chance of making an arrangement for wages. The Norwegians worked in the bottle-house for eight or nine hours a day, and then they had to fill up the remainder of the day in some other employment, so as to make a livelihood. Their wives had also to work, and the younger children were left at home under the charge of the elder. If a British workman had to stoop to that, the sooner they had a revolution the better [Applause and laughter.]

Mr. Park next spoke on behalf of the bottle manufacturers. Foreign competition had been talked lightly of, but now they found it was no matter they could set aside. When he was up at London he saw five vessels unloading cargoes of bottles, four of them being French vessels. It was a good thing for them that Englishmen were bringing these bottles, for if they did not, the foreigners would sell them in the streets at so low a price that it would be no use making bottles in England. ["No, No," and "It is all bosh."] The North of England was more than any other place affected by depression in the glass trade. In Lancashire and Yorkshire they were doing very well, but in Dublin, Glasgow, and the North of England they were suffering from much competition. The foreigner was not content to work in his own country, and now they were beginning to come into our works. During the last fortnight 51 Swedes had been introduced into Scotland, making the number now in Scotland 93. [Shame.] They need not be surprised if there were during the next fortnight 50 imported into Sunderland.

The Sunderland Daily Echo of November 18, 1885, publishes a letter from a practical point of view which gives another side of the question.

[Foreign competition and the glass trade.—A way out of the difficulty.]

Mr. Storey has received the following letter:

"DEAR SIR: My brother Jim having sent me Thursday's Echo, re your meeting with the Sunderland glassmakers, I think it right to give you some facts that may be of use. Having been at the Southwick Sheet Works till I was 22 years of age, and connected with the warehouse, I am well acquainted with the old process of sheet manufacture, and having been in Messrs. Pilkington Bros.' Works here (perhaps the largest in the world) since February, 1882, I also know something of the new. It would be only wasting your time to explain the old method, for you have it at Messrs. Hartley & Co.'s. The new, however, is here, and only here in this country.

"The glass is prepared in tanks and fired by gas. They are worked continuously from 12 on Sunday night till 10 on Saturday night—three shifts of 8 hours each—so that a glassmaker here works 8 hours and is off 16, and as they can do this six times a week, he actually works 48 hours, against the Sunderland man's 32 to 34. These tanks are economical, both in manual labor and in the consumption of fuel, can be better handled and managed, and are producing the best sheet glass in the world for the markets of to-day. Having experience in the qualities produced by Messrs. Hartley & Chance, also some of the best continental manufacturers, I am decidedly of opinion that P. Bros. produce the best article for the buyers of to-day. True, the men on the whole are not receiving as high wages as before 1874, say, but we have

glassmakers now who earn 15s. every 8 hours they work, and few, if any, leave the works on Saturdays under £2 per week. The working hours per week are longer, more glass is produced for a little less money, but far better this than the experience of the Sunderland glassmakers for the last two or three years. Both glass and bottle makers from home are here, and are living in comfort (those who take care of their money). Numbers have been here, but getting homesick, or finding things a little strange, left their situations, and, I presume, preferred to starve at home rather than overcome the strangeness of a new place in Lancashire.

"What has made these works what they are? The masters are men of power, and thoroughly understand their business, having been trained from boyhood for their several departments. One of them years ago improved upon Siemen's patents, and has gone on improving—in short, has made it his life's study; with brains, pluck, and unlimited capital at his command. Improved ways of cheap and efficient production, are in every department, and sand is got for digging it.

"Having charge of one of the cutting and packing departments, I can say our markets extend not only to every nook and corner of these islands, to all our colonies, to Northern Europe via Newcastle and Hull, but to Spain and Italy, Egypt, and India, Africa, and the States also. We have agents at several places on the continent, and a warehouse, filled with both men and glass from St. Helens, in Paris. We are full of orders, both home and foreign, and are working overtime. Yearly the output increases, and signs are not wanting to show that in the years that are to come means will be provided to still further meet the demands of a constantly widening circle of friends. The Sunderland workmen will have to study other interests besides their own, and comply with the demands of the day. Foreign competition must be met, not by protection, but by getting to know other and cheaper methods of production, and getting quit of the idea of £4 per week of thirty-two hours' work.

"WILLIAM POTTS,

"95 Oxford street, St. Helens, Lancashire.

"16th NOVEMBER, 1885.

"SAMUEL STOREY, Esq., M. P., *Sunderland.*"

As further bearing on the Sunderland district, I quote from the report:

SUNDERLAND.

This chamber includes within its area the borough of Sunderland and neighboring villages, and includes in its list of manufactures glass and glass bottles. It sends a special report on the glass-bottle trade, which contains the following observations: "Ten years ago, 36 bottle houses were at work in this district, whereas now only 14 are working. By the 22 bottle houses being thrown out of work, wages to the extent of £50,000 to £60,000 per annum have been lost to the district. It is worthy of note that this trade is gone out of the Kingdom, and the work is now executed abroad.

The manufacture of sheet and flint glass has also been adversely affected during the same period.

During the last five years the glass trade has been dull.

The glass-bottle trade may be described as a declining industry. The intensity of the depression has increased during the last two years.

The glass and glass-bottle trade are suffering from foreign competition as regards the home trade, having previously been driven out of the foreign trade.

The rate of wages both for skilled and unskilled labor is above the average of the last 20 years, except in the glass-bottle trade, in which the wages are below the average.

There is great diversity of opinion as to the measures which might be taken by legislation and independently of legislation, and it is difficult to embody them in an answer to the question, as to what measures could be adopted to improve the existing condition of trade by legislation and "independently of legislation."

In answer to the question "To what extent does the chamber consider that the present condition of trade and industry in their district has been affected by the operation of (g) overproduction and (h) foreign competition, and (k) foreign tariffs and bounties?" they state that the condition has been (g) seriously affected in all trades except glass by overproduction, but to no appreciable extent except in the glass and glass-bottle trades by foreign competition, and that it has not been affected adversely

except in the glass and glass-bottle trades by foreign tariffs and bounties. (Pages 72 and 111.)

The report of the Sunderland Chamber will doubtless be the most interesting to the glass-bottle hands of the whole trade, as it is the only one which contains observations on this industry.

F. H. WIGFALL,
Consul.

UNITED STATES CONSULATE,
Leeds, March 10, 1886.

AUSTRIA-HUNGARY.

REPORT OF CONSUL-GENERAL JUSSEN ON THE FINANCES AND EXPORT TRADE OF AUSTRIA.

I have the honor to report that the debate in the upper house of the Austrian Reichstag on the budget for 1886 has just closed, and that after a discussion of only four hours' duration the action of the lower house was approved and the budget passed without a dissenting vote.

CRITICISM OF THE BUDGET.

But this result was not reached without serious criticism of the prevailing financial policy, nor without expression of well-grounded apprehensions as to the future financial, commercial, and industrial condition of the Empire.

Inasmuch as this criticism and these fears emanated from the friends of the Government, from men who are prominent members of the aristocracy and staunch friends of the ministry, their complaints of existing and predictions of future dangers cannot be attributed to partisan zeal or disappointed political aspirations; they are not colored by the rancor of factious opposition, and must, therefore, necessarily be true.

During the brief discussion of the budget the opinion was expressed that the peace of Europe, and with it that of the Empire, was seriously threatened, and that a single false diplomatic move or a mere mistake may involve Europe in war, and that diplomatic assurances are no guaranty of peace. When war comes, it was said, Austria would probably not be in a financial condition to achieve success, and the former sad experience of the Empire to forego the fruits of military efficiency because the money is lacking to move the army would in all probability be repeated.

The policy of the minister of finance was characterized as merely palliative and curative, and he was charged with exhausting the credit and resources of the country in times of peace to such an extent, that the demand for revenue could not possibly be increased in time of war.

These aristocratic statesmen admitted that the industries of the country were in a deplorable condition, that the farmers were oppressed by heavy taxes, and that the commercial and financial prospects were dark in the extreme. The fact that the collection of taxes by way of execution and forced sale was constantly increasing was commented upon and the inevitable conclusion drawn, that in consequence the poverty and misery of the people must also be on the increase.

The minister of finance, who, according to the parliamentary rules of the Austrian Reichstag, is expected to answer the arguments affecting his department, did not succeed in allaying the apprehensions of his

criticising friends, who, from the standpoint of their undoubted loyalty to the Crown and to the cabinet, attacked his policy quite as vehemently, though more politely, than the opposition members of the lower house.

CHANGES PROPOSED.

There seems, therefore, no prospect of a reduction of the tariff in such necessities as coffee, petroleum, and salt, nor of the abolishment of the pernicious lottery system, which demoralizes and impoverishes the lower classes, but yields to the Government an annual revenue of at least 7,000,000 of florins.

The house-rent tax remains at the exorbitant figure of 43 per cent. of the gross rent receipts, and the minister of finance is forced to admit that he is not in a position to promise a speedy reform in the direction of this sort of taxation.

The Landsturmesetz (a law providing for the organization of the reserve of the army, and including all subjects from the age of 19 to that of 60 years as liable to military duty in times of war for garrison purposes) has just been passed by the lower house, and adds to the discouragement of the people and to the fears for the near future. More money will be needed to organize and make effectual this reserve, and more taxes are in prospect.

As a matter of course this measure seems unavoidable when the immense military armament of Austria's neighbors is considered, and this reserve is undoubtedly an unavoidable necessity for the purposes of self-defense, demanded by the geographical position of the Empire; but the burden entailed upon the people is nevertheless heavy and hard to bear, and the effect which the execution of this law may have upon the commerce and industrial interests of the country is simply incalculable.

MEASURES TO INCREASE THE AUSTRIAN EXPORT TRADE.

Although a majority of the people look towards the Government and its measures for assistance, and expect sudden and ample relief as to the stagnation of trade and industry through some sort of legislative legerdemain, many energetic and enterprising business men of the country seem to be ready to adopt the American maxim of "help yourself," and are making strenuous efforts to increase the export trade of the Empire. Foremost among these are the members of the Austro-Hungarian Export Society of Vienna.

This society is in correspondence with the Austrian consulates in foreign centers of trade, as well as with Austrian business houses in foreign markets, and is thus enabled to give valuable information to the home manufacturers with reference to the state of the markets abroad, as well as with regard to the kind and description of goods in demand, the rates of tariff, responsibility of foreign merchants, scale of prices, climatic conditions, &c.

As I have already particularly stated in previous reports, this society has been principally instrumental in urging and in convincing the manufacturers of Austria of the necessity of the establishment of sample depots of Austrian manufactures in foreign trade centers, and quite recently another auxiliary to the export trade has been organized in Vienna, mainly through the efforts and energetic action of this same export society.

The auxiliary thus contemplated is the establishment of an "export sample depot" in this city, in connection with the famous Oriental Museum.

This depot is to contain samples of manufactures sold in foreign markets, without reference to their place of manufacture, thus displaying the wares most in demand in these markets and informing the home manufacturers of the character, shape, quality, and price of the goods which he should produce if he desires to extend his trade to these points.

The obvious distinction between foreign sample depots abroad and an export sample depot in Vienna is that the former is calculated for the use of the foreign purchaser and the latter for the information of the home manufacturers.

If American manufacturers are at all inclined to increase the exportation of their wares to Austria-Hungary, it would certainly be advisable for them to follow the example of the Austrian manufacturers with regard to the establishment of sample depots.

I have frequently called attention heretofore to the advisability of this indispensable auxiliary to our export trade, and consider the subject of sufficient importance to repeat this advice again and again until the trial is made.

TRADE WITH UNITED STATES.

Since the establishment of direct navigation between Triest, Fiume, and New York, by Henderson Brothers, proprietors of the Anchor Line, who have nearly forty steamers at their disposal, many impediments to the importation of American goods into Austria-Hungary will be removed.

Direct steam communication between the two countries will necessarily reduce the rates of freights and commissions, and storage on the way through England or Germany will be entirely avoided. The Anchor Line has made arrangements for a special tariff of freights with the Austrian railroads, and the negotiations with the Hungarian railroads for a like arrangement of special and reduced rates of freight has just been concluded.

With proper concert of action on the part of American manufacturers and exporters, I have no doubt an increase of the export trade to Austria-Hungary can be accomplished.

With a well-supplied sample-room in Vienna and Budapest, superintended by experienced and energetic Americans, it will be speedily ascertained what class of goods will best suit the trade of these markets.

The tariff, of course, is an uncertain quantity in the calculations of the future; at present, however, it is no serious impediment to many articles of American production, which I have particularly mentioned in my former dispatches.

AMERICAN COMPETITION.

American competition in the field of industry and manufacture is a subject of earnest consideration and serious apprehension on the part of the Austrian people and Government.

This fact being notorious and indisputable, the natural deduction follows that we are in a position to compete successfully with Austrian manufactures, and as a logical and practical sequence it would seem to follow that we should improve our opportunity and make use of our advantages.

These advantages would hardly seem plausible or credible if we consider the rates of laborers' wages paid respectively in Austria-Hungary and in the United States. The term "pauper labor" may be applied

to the laboring classes of Austria-Hungary with peculiar emphasis, as far as the rates of wages paid here are concerned. But against this low rate of wages we bring into the contest American skill and genius, American energy and machinery, and, above all things, it must not be forgotten that, as a rule, the American laborer performs twice, and in some branches of industry thrice, the amount of labor in a given time as compared with the results achieved by an Austrian laborer.

We are a hard-working people, ready to take advantage of all improvements and inventions; we seem to live only to work and to accumulate the rewards of labor; our recreations are few and far between, and we observe hardly any but national holidays, and with us "blue Monday" is not a factor in the week's calculation.

The Austrian is in the highest degree conservative. He works exactly in the same manner and mostly with the same tools with which his great grandfather used to dispose of his daily task. He prefers hand labor to machinery. Holidays are frequent. "Blue Monday" is a time-honored institution, and, above all things, the Austrian lives to enjoy himself according to his means, and sometimes beyond his means. The chances for an investment of his savings are not as promising here as with us. A home of his own, though ever so modest, is beyond his reach. Real estate bears fabulous prices, and the laborer finds consolation for his poor prospect in life by working as little as possible, and by enjoying as much of life's leisure and recreations as his earnings can purchase, and he insists, moreover, that his philosophy is the most reasonable and satisfactory in the end.

Possibly he is right from his individual standpoint, but there can be no doubt that this sharp distinction between these two theories of life and its purposes, accounts, in a great measure, for the supremacy of American industries over those of Austria-Hungary.

EDMUND JUSSEN,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Vienna, April 23, 1886.

SOURCES OF FRUIT SUPPLY IN AMERICA.

To determine what might be the capacities of fruit production in the tropical parts of America, the following circular was sent by the Department to consular officers of the United States in Mexico, Central America, the West India Islands, and South America. The replies received are printed below.

[Circular.]

DEPARTMENT OF STATE,
Washington, March 17, 1886.

To Consular Officers of the United States:

GENTLEMEN: You are instructed to prepare a report upon the conditions which control the markets for the following fruits (if grown and of commercial importance) in your consular district, viz: Oranges, bananas, pine-apples, and cocoa-nuts. This inquiry is intended to cover more especially the following points:

(1) Average annual production in your district of each kind of fruit. Has the production increased or diminished in recent years, and is it capable of being greatly extended?

(2) Average prices at points of shipment for each month of the shipping season. The length of that season.

(3) Special varieties of the fruits, quality, and size.

(4) Average annual shipments of each kind of fruit, and the countries to which shipments are made, giving as nearly as possible the proportion taken by each country.

(5) Facilities for shipping to the United States. Compare freight rates to the United States with rates to other countries.

I am, gentlemen, your obedient servant,

JAMES D. PORTER,
Assistant Secretary.

MEXICO.

ACAPULCO.

REPORT OF CONSUL JOHN A. SUTTER.

The approximate average annual production in this consular district, within 40 miles from this port, is estimated as follows:

Oranges	1,000,000
Limes	15,000,000
Pine-apples	500,000
Cocoa-nuts	500,000
Bananas	bunches.. 6,000
Plantains	1,000,000

There being as yet no wagon roads in this consular district, fruit beyond 40 miles from Acapulco is not available for the present.

The production of limes and pine-apples has increased in recent years owing to the increased demand for these fruits in the market of San Francisco; the production of all the fruits mentioned might be increased to an almost unlimited extent, if there was any market for them.

The average prices of these fruits at the port of Acapulco, the only point of shipment, all the year round are as follows:

Oranges, per 1,000	\$5 00
Limes, per box of 1,000	3 00
Pine-apples, per 100	6 00
Cocoa-nuts, per 100	2 50
Bananas, per bunch	38
Plantains, per 1,000	8 00

Payable cash in Mexican silver coin. Delivered alongside the steamers without other charges, except the cost of boxes and crates, imported from San Francisco. Although oranges and limes are scarce for a short season, fruit dealers here would engage to furnish fruits all the year round at the same prices.

The special varieties, qualities, and sizes of the Acapulco fruits are well known to the San Francisco dealers.

The annual shipments to San Francisco, the only market to which fruit from this consular district is exported, are as follows: 15,000 boxes limes, 20,000 oranges, 12,000 pine-apples.

Other fruits are not exported at all, as, owing to the high rate of freight charged by the Pacific Mail Steamship Company, they cannot compete in the San Francisco market with fruits imported from the islands in the Pacific Ocean.

The steamers of the Pacific Mail Steamship Company are the only vessels affording to this coast regular communication with San Francisco, their rate of freight being \$20 United States gold coin per ton of

2,000 pounds or 40 cubic feet, freight money to be prepaid, and without any responsibility for delivery in good order.

Under more liberal conditions of freight the export of fruit from this port would no doubt promptly increase. (April 12, 1886.)

GUAYMAS.

REPORT OF CONSUL A. WILLARD.

The orange is the only one of the fruits mentioned which are cultivated for export in this State. A few bananas, pine-apples, and coconuts are raised, but are used in home consumption. The average annual production of oranges is 3,000,000. The production has increased since 1884, when the exportation first began, and is capable of further increase as the valley lands around Hermosillo are well adapted to its cultivation, and being plentifully watered produces a superior quality of the fruit. Many new orchards are being planted, and orange-growers having found a market for their fruit are bestowing more care on their orchards.

Average prices during the season.

	Per thousand.
Export or wholesale	\$7 to 10
Retail or home prices	10 to 15
Peddlers and fruit stands	15 to 30

The season commences in November and lasts till April, or about five months. There is only one variety, being of a fine quality and quite large, which originally was brought from Sicily.

Average annual shipment 2,000,000 oranges. Those exported are sent to the following points or places in the United States, viz: Socorro, Albuquerque, Las Vegas, N. Mex.; Topeka, Kans.; Denver, Colo.; Kansas City, and Saint Louis, Mo.; Chicago, Ill., and some few lots to Tombstone, Benson, Nogales, and Tucson, Ariz. No shipments are made to any foreign country other than the United States.

The shipping facilities are by the following railway routes, viz: Sonora Railway, New Mexico and Arizona Railway, Atchison, Topeka and Santa Fé Railway, all connected, better known as the Santa Fé Line, or Atchison, Topeka and Santa Fé system.

Oranges are also raised at Ures and Guaymas, but are principally used in home consumption.

As the interest in the cultivation of this fruit is increasing, several thousand may be shipped from this place during the coming season, and some new orchards are being planted.

The estimated export to the United States for year 1885 was 4,000,000 oranges for the season, which is accounted for by the fact that over 1,000,000 oranges have been shipped this present season through this port coming from Lower California, and which amount will no doubt be increased the coming season. (April 13, 1886.)

TAMPICO.

REPORT OF VICE-CONSUL PRESSLY.

AVERAGE ANNUAL PRODUCTION.

The surroundings of this port are naturally adapted to the growth of oranges, bananas, pine-apples, and lemons, but the exports have been of so trifling a character as not to merit any distinct mention. About twenty years ago there was an exportation of about 15,000 bunches monthly. At that time a line of sailing vessels was kept plying between this port and the ports of Galveston, New Orleans, and Mobile, bringing flour and lumber, and in their return voyages the vessels were loaded to their utmost capacity with fruit, which served as ballast and brought a handsome profit.

Since the year 1870 the exportation of fruit has gradually diminished, until, probably, not 2,000 bunches of bananas are shipped during the entire year, and not an orange.

The causes of this are many. The fruit trade has never been made a specialty. Before the completion of the railroad from Vera Cruz to Mexico, Tampico was the outlet for the exportation of a considerable portion of Northern and Central Mexico, and, as a natural consequence, the imports for the same territory passed in through the same channel.

When the above-mentioned railroad was completed, the silver and mineral *conductas* went to Mexico or to the nearest point on the railroad, hence a depression in business, and the commerce was directed to Vera Cruz and other points.

Until a few years ago all the flour used in this place and surrounding country was brought from the United States, but the heavy import duty, which amounts to about \$11 per barrel, exclusive of first costs and freight, has paralyzed the trade, and a brand of foreign flour is an unknown article in the commerce of this place.

The depression in commerce and the depopulation of the place to some extent by removals have lessened in a considerable measure the demand for lumber. In these and other causes is seen the reason for a diminished exportation of fruit.

Tampico is situated at the confluence of the Panuco and Tamirr Rivers, and from the spontaneous growth along these rivers of the different varieties of bananas the production is capable of being extended to a supply of 100,000 bunches per month the entire year.

GROWTH AND CULTIVATION.

The banana is an annual, the fruit maturing in about one year from the time it is planted.

The trunk of the plant attains a height of from 8 to 10 feet, and averages a circumference of 30 or more inches at the base. It gradually diminishes in size to where it sends out a half dozen or more long, broad leaves, measuring from 4 to 6 feet in length, and 1 in breadth.

From the top and center of the plant the fruit appears, and consists of a stock on which are from four to twelve clusters called "hands," each having from eight to ten bananas. A bunch of eight clusters, or "hands," is the size demanded in the trade.

As soon as the plant begins bearing it sends up some half dozen or more shoots that may be transplanted. As soon as the fruit is cut, the

trunk from which it is taken is felled. The cultivation is exceedingly simple and with little or no expense after the first planting.

In preparing the field the first thing is, to clear away the dense natural growth of low trees and bramble-bush all interwarped with innumerable vines, which is done by cutting it down with *machetes*, then leaving it for a time, and setting fire to it, afterwards cleaning what remains.

Then, with a sharpened stick, a hole is made, and the shoot put into it, pressing the earth around with the foot.

The trees are planted usually in the form of squares, at a distance of about 12 feet.

Bananas thrive best in damp, alluvial soil, and this district abounds in such lands, and for miles up the two rivers.

The mode of bringing it into market is easy, as it can be done in boats.

There are five different varieties. The plantain, generally eaten fried or boiled; the skin of the fruit being a dark red color, and the fruit a rich cream color; the manzana, or apple, rather small, the skin being a rich yellow, and the fruit is considered the most preferable; the guineo, a short thick banana and much prized for table use, and the Indian yellow.

The average price the year round is from 15 to 20 cents a bunch, and when shipments were made in former years to the United States, the price was from 10 to 12 cents a bunch, and the freight from 15 to 20 cents on the bunch.

ORANGES.

Of this fruit there are two kinds, termed generally the sweet and the sour. The former is the ordinary orange or orange of commerce. There being no special demand more than the ordinary home consumption, no attention has ever been paid, as far as I am able to ascertain, to the cultivation and growth of this fruit. But there is no reason why the production could not be extended to an immense quantity.

The soil is suitable to the growth of the tree, as is proven by the few trees that every family have; the climate is all that one could wish for, this immediate section never being visited by frosts.

It is thought with the production, as it is, from 3,000 to 5,000 barrels could be shipped every season. The season extends from September to February. The ordinary price is from \$5 to \$6 per thousand, and they can be freighted at \$1 to \$1.25 per barrel.

PINE-APPLES.

The cultivation and shipment of the pine-apple could be developed into an important industry, the fertility and depth of the soil in many localities being peculiarly adapted to their growth. There are only a few farms in this vicinity, and the variety of fruit is very luscious.

The fields are easily made ready for cultivation, and in the same way as for bananas mentioned above. The plants are planted about 2 feet apart, and seldom, if ever, fail to grow. When once rooted, the only care of the cultivator is to keep down the bushes and weeds, and the plants will take care of themselves.

The fruit matures in about eight months, the stalk being about 3 feet high, and produces only 1 apple, after which it dies; but from its root spring up a number of shoots that bear fruit also.

An acre of ground will give room to about 6,000 plants.

It is not a crop that invites cultivation. The leaves, bending out from the stalk, are long, stiff, and blade-like, and with serregated

edges, making the work of keeping the grounds clean and gathering the fruit tedious and difficult.

The price is from 25 to 50 cents per dozen, the first crop being the principal one and bringing the best price.

The cocoanut is not raised in this section, but limes, sweet and sour, lemons, mangoes of different varieties, and other tropical fruits are to be had in great abundance.

The only impediment to making this a large exporting fruit market is the bar. Only vessels of light draught, not more than 8 feet, can enter. With vessels of such draught and with active, aggressive, patient business men there is money in fruit in this place.

NEIL E. PRESSLY,

Vice-Consul.

UNITED STATES CONSULATE,
Tampico, Mexico, April 23, 1886.

CENTRAL AMERICA.

BRITISH HONDURAS.

REPORT OF CONSUL MORLAN.

The fruit trade, or growing of tropical fruits for export from the colony of British Honduras, may be said to have commenced in the year 1879, as previous to that year the only exports in that line consisted of cocoanuts, which were shipped to the United States and England. The total value of the cocoanuts shipped previous to that year for the four preceding years was as follows, viz: 1875, \$2,430; 1876, \$1,005; 1877, \$4,380; 1878, \$3,700.

In the year 1879 the governor, Sir Frederick P. Barlee, made a contract with the agent of the firm of Macheca Brothers, fruit dealers of New Orleans, who had been running a small trading schooner to the colony, to place a steamship on the line for the purpose of carrying the mails and to encourage the growing of fruit for export to the United States. This year the exports were increased by a few barrels of oranges and limes and 50,000 plantains, the total value for the year being \$11,960.

The steamship mentioned above was paid an annual subsidy of \$25,000, and made a round trip every three weeks. It was also stipulated in the contract that the vessel should call at several places in the colony for the purpose of buying fruit from the planters.

The governor then encouraged the people of the colony to engage in fruit planting, and made very liberal laws for the purchase and lease of lands in the public domain. Being thus assured of a market for any fruit they might raise, a number of people commenced planting, and several joint stock companies were formed. With very few exceptions they have all prospered and made money.

The growth of the fruit trade of this colony has been very rapid, and is now one of the leading interests. I doubt not but with the advent of railroads it will become the largest.

In 1882 the business of the steamship company had increased to such an extent that they placed another and larger steamship on the line, and trips were made every nine and twelve days instead of every twenty-one days. On the expiration of the contract in 1884 a new contract was made for a period of five years, at a slight reduction in the amount of subsidy, and another large and finer steamship was bought and run in the place of the first steamship, which was now too small for the

trade. The following clause was inserted in the last contract with the agent of the steamship company:

SEC. 19. The said James Leitch hereby covenants and agrees that in the purchase of fruits and other products by him, or on his account, he will give preference to the produce of this colony, prices and quality being equal to what might be obtained outside the colony; and that one of the vessels employed in the performance of this agreement shall call at least once a month at the following places in the colony for the purpose of taking in such fruits or other products, viz, Monkey River, Sitter River, Storm Creek, and Mullius River.

EXPORTS.

The total exports for the year 1880 and the succeeding years are as follows, viz:

1880	\$29,371
1881	38,479
1882	38,347
1883	67,505
1884	72,582
1885	74,755

This year, 1886, will show a large increase over 1885, and may be safely estimated at \$90,000 to \$100,000.

I inclose herewith a statement showing the amounts and values of each kind of fruit exported from this colony for the years 1880 to 1885, inclusive.

It will be seen by this table that the business has increased very rapidly the past few years, and it is still increasing in the same ratio. The increase is principally in bananas and plantains, as they do not require so much time to mature. There will be a very large increase in the export of cocoanuts in a few years, as there are a large number of "cocals" or "cocoanut-walks" that are just beginning to produce; some of them contain 20,000 to 80,000 trees. The entire trade may be said to be in its infancy, and only requires railroads to be extended to vast proportions.

PRICES.

The prices of fruits and nuts in this market are usually arranged by contract for the calendar year, and are as follows: Bananas, 50 cents per bunch; plantains, \$10 per thousand; cocoanuts, \$15 per thousand; limes, \$2 to \$3 per barrel; mangoes, \$3 per barrel; oranges, \$3 per barrel; pineapples, 75 cents per dozen; alligator pears (avocado), \$6 per barrel; tamarinds, \$3 per barrel. These prices are, with the exception of cocoanuts, pretty constantly maintained. The prices of nuts are regulated by the supply and demand, and vary from \$10 to \$30 per thousand.

The prices given above are in Belize currency, which at the present time may be estimated at 73 cents the dollar compared with American money. It consists principally of Peruvian and Chilian soles and pesos, and small money of Guatemala and Mexico. Gold, American and English silver, and Mexican dollars have long since left the country. The fruit is delivered alongside the fruit steamers, and after being inspected is paid for either by the purser or by the agent in Belize.

SHIPPING FRUIT.

Fruit is shipped from the colony the entire year, the season of greatest demand being the winter and spring months, when there are no fruits produced in the United States. The summer months are the season of greatest production.

The fruits are usually cut when about three-fourths ripe, and if considered too ripe or green by the inspectors, are rejected. In bananas,

if the bunches are too small, they are counted two or three for one. A merchantable bunch of bananas should contain ten bands (*i. e.*, clusters) and upwards. The shipments at this season (May and June) average 15,000 to 20,000 bunches of bananas per month.

The bananas shipped are usually the yellow variety. There are a number of other varieties grown, such as the red, and several dwarf varieties, called "fig," "lady fingers," "chiva," "botlass," &c.

The pineapples are of two varieties, the "red Spanish," or "horse pine," and the "sugar-loaf." The above names are local, and the same variety may be known by several names in different localities. The fruits compare favorably with those grown in other localities in size and flavor. There are a large number of fruits that are too delicate to ship, such as "custard-apple," "papaw," "mammy apple," "monkey-cap," "coco-plum," "cashew," &c.

FRUIT PRODUCTION.

It is impossible to give the average annual production of fruits for export—as, for example, bananas were not grown for export in 1879; in 1885 there were produced for export 96,572 bunches, valued at \$41,270. The product for 1885 will undoubtedly be doubled in two or three years, and that amount might safely be taken for the average for the years 1886 to 1890.

The entire fruit product may be said to be shipped to the United States, the only exception being a few cocoa-nuts that are shipped to England as broken stowage. New Orleans is the port of entry for the United States, and from there it is distributed to the North and Northwest. Several attempts have been made to ship fruit from the colony to New York, but they have not proved successful thus far, the voyage requiring too much time.

FACILITIES FOR SHIPPING.

There are no facilities for shipping fruit from this colony at the present time, as the steamship company are buyers, and do not care to take it as freight. They do not quote rates, and to keep opposition away have made contracts with all the principal fruit-growers for their fruit and with the merchants for their freight from New Orleans. Several lines of steamships have at various times tried to run in the fruit and carrying trade of this colony in opposition to the subsidized line, but have always failed; and to prevent competition between the two largest fruit companies of New Orleans (the Macheca Bros. and S. & J. Otere) they have divided the coast of British Honduras, Guatemala, and Honduras with the Bay Islands among themselves, each being bound by a penalty to keep within their own territory.

As the bulk of the fruits shipped from the colony consists of bananas and plantains, it would be almost impossible for growers or commission merchants to ship unless they could provide entire cargoes for steamers. They would also be under the necessity of having connection with the fruit dealers of the North, to whom the bulk of the fruits is shipped immediately on its arrival at New Orleans. Some business might be done with fruit that can be packed in barrels, such as oranges, limes, lemons, and cocoa-nuts.

Freight rates to and from the United States average 20 cents the cubic foot; to Europe they are about double that.

ALBERT E. MORLAN,
Consul.

UNITED STATES CONSULATE,
Belize, May 20, 1886.

Quantities and values of fruits and nuts exported from the colony of British Honduras for the years 1880 to 1885, inclusive.

Variety.	1880.		1881.		1882.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Bananas..... bunches..	8,958	\$4,475	22,239	\$7,345	25,684	\$12,200
Cocoa-nuts..... number..	1,377,000	23,405	1,312,040	23,540	1,209,685	26,278
Limes..... barrels..	9	33	9	47	12	126
Mangoes..... do.....	66	165	35	95	42	120
Oranges..... do.....	87	75	34	68	21	45
Pine-apples..... number..	800	50	1,404	98	744	62
Plantains..... thousands..	177	1,105	323	2,261	52	445
Tamarinds..... barrels..					17	51
Pears (avocado)..... do.....	10	60	3	16	4	21
Total.....		29,371		38,470		38,347

Variety.	1883.		1884.		1885.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Bananas..... bunches..	87,089	\$38,140	88,588	\$39,347	94,572	\$41,270
Cocoa-nuts..... number..	1,061,281	21,340	1,554,149	27,510	1,833,891	28,275
Limes..... barrels..	44½	105	6½	16	38	95
Mangoes..... do.....	18	30	47	120	62	155
Oranges..... do.....	20	60	12	30	25	65
Pine-apples..... number..	5,112	280	8,496	435	3,360	185
Plantains..... thousands..	1,027	7,525	501	5,067	500	4,005
Tamarinds..... barrels..			6	15		
Pears (avocado)..... do.....	8	25	6	22	21	105
Total.....		67,505		72,582		74,755

NICARAGUA.

REPORT OF CONSUL CHARLES H. WILLS.

There are no fruits shipped from this consulate to the United States. The distance is too far to be received in sound condition. (May 3, 1886.)

PANAMA.

REPORT OF CONSUL-GENERAL ADAMSON.

While all of said fruits are grown within this consular district, the quantities grown are so small as to have no commercial importance. None are exported from this port. Bananas are shipped in large quantities from the port of Aspinwall (Colon), and cocoa-nuts in considerable quantities from the port of San Andres within the same consular district. (May 26, 1886.)

COLON.

REPORT OF CONSUL R. K. WRIGHT, Jr.

The only fruit exported from this district about which any reliable data can be found is the banana.

The total production was, in 1883, 24,000 tons; 1884, 15,000 tons; and in 1885, 11,000 tons. The production has thus decreased more than 50 per cent. in three years, and will decrease still more. The production of bananas on the Isthmus is unlimited by natural causes, but there are two accidental reasons which have brought about the above decrease, and which, while they exist, will prevent any further extension, viz:

The proximity of the canal works, which absorb the labor, and the limited facilities for shipping to the United States.

The average price all the year is \$15, gold, per ton. The season for shipments to New York is all the year; for shipments to New Orleans the season lasts from December to May; it is regulated by the quarantine at New Orleans.

The only distinction made by shippers is in the size and general condition of the bananas. They divide them into two classes, called "firsts" and "seconds."

All fruits exported from this district go to the United States.

The only regular line at present is the Pacific Mail Steamship Line from Colon to New York. Occasionally an Atlas steamer takes bananas to New Orleans from here, or from Boca del Toro to New York.

The trade in cocoa-nuts from this district is carried on in sailing vessels, all American, and from San Andres and the San Blas coast.

No reliable data exist here from which a report can be made. All cocoa-nuts, however, go to New York, New Orleans, or Baltimore.

MAY 8, 1886.

SOUTH AMERICA.

BRITISH GUIANA.

REPORT OF CONSUL PHILIP FIGYELMESY, OF DEMERARA.

Oranges, bananas, and pine-apples are entirely neglected in this colony, though their production would be large and remunerative if encouraged. But every other cultivation, more or less, gives place to that of the sugar cane. Cocoa-nuts are more cultivated, and the trees are better cared for. In 1885, 198,832 nuts were shipped to England, paying \$9.60 freight by steamer, \$4.80 by sailing vessel, with a 10 per cent. discount exacted by the shipmasters. The value of this export was \$2,390.96. At the present time the yield is considerably less, and vessels are refusing them as freight, as they damage bags of sugar by their oily leakage. Cocoa-nuts are sold in the colony to the East Indian immigrants, who use them for food, and also extract an intoxicating liquor from the tree, called "arrack." One firm having two plantations, utilize the fruit by extracting oil from it, and making feed for stock and cattle; also fiber, which is readily sold. (April 30, 1886.)

BRAZIL.

REPORT OF CONSUL ROBERT CLAYTON, OF PARA.

None of the fruits named in the circular are exported from this port, the supply being only sufficient for the home consumption. (April 24, 1886.)

DUTCH GUIANA.

REPORT OF VICE-CONSUL HENRY BARNETT, OF PARAMARIBO.

The supply of fruits grown in this colony is unequal to meet the local demand, and with the exception of a few cocoa-nuts taken on board for dunnage, none are exported. The following statement (which shows a decrease even in this one kind of fruit exported) gives the shipments for the past two years:

Exported to—	1884.		1885.	
	Number.	Value.	Number.	Value.
Holland	121, 199	\$1, 458 00	97, 186	\$1, 168 00
Great Britain	20, 900	250 80	12, 700	153 40
North America	6, 700	80 40	.....	.....

There are no means of arriving even approximately at the annual production, but it appears to be on the decrease, although capable of unlimited extension only dependent on capital.

The fruits generally, oranges, bananas, pine-apples, &c., are second to none in the West Indies.

There are trading between this port and the United States sailing vessels, which arrive and depart on an average once a month; and the steamers of the Dutch Direct Line about the 3d of each month leave here for Curaçao, connecting there with the Red D Line from New York. As no fruits are shipped, I am unable to compare freight rates to the United States with rates to other countries. (April 21, 1886.)

VENEZUELA.

REPORT OF CONSUL W. S. BIRD, OF LA GUAYRA.

Although the soil and climate of Venezuela are peculiarly adapted to the successful growing of oranges, bananas, pineapples, and cocoa-nuts, yet the attention of the people has been so long and persistently directed to the raising of coffee and cocoa that the just importance of the fruit crops has been overlooked, and therefore, beyond the raising of a bare supply for domestic consumption, scarcely any effort has been made to raise fruits for export.

While the average annual production has been steadily maintained for several years past, the amount has not been perceptibly increased, although there is every natural cause for the extension of this industry.

The length of the season at shipping points along this coast and the average prices during the shipping season are as follows: Oranges last from May 1 to September 1, and are worth 75 cents per 100; bananas last from June 1 to September 1, and are worth 25 cents per bunch; pine-apples last from September 1 to November 1, and are worth \$6.50 per 100; cocoa-nuts last from July 1 to October 1, and are worth \$1.60 per 100.

While no special varieties are cultivated, yet in size and quality the fruits of Venezuela will compare favorably with those of the West Indies.

With the exception of a few thousands of cocoa-nuts annually exported to New York, none of the fruits of the country are sent to foreign markets.

The facilities for shipment of fruit to the port of New York are good. Steamers leave Venezuela every twelve days, arriving in New York twelve days thereafter. Rates of freight are reasonable, and will compare favorably with rates to other points.

While, from the foregoing statement, it will appear that the fruits of Venezuela are of small commercial importance, yet this report is presented with a view of directing attention to the favorable conditions for the growth of this trade. With a climate and soil so well adapted to the purpose, and with speedy and cheap transportation to the United States, it may be reasonably expected that the constantly growing demand of our country will ultimately stimulate these people to contribute a large portion of the general supply. (May 21, 1886.)

Vice-Consul Richard Kolster writes from Puerto Cabello, Venezuela, under date April 14, 1886:

Plenty of fruits named is grown here, but not more than what is quickly consumed in the country itself and the neighboring islands. No exports are made.

WEST INDIES.

ANTIGUA.

REPORT OF CONSUL CHESTER E. JACKSON, ANTIGUA.

On account of frequent droughts in Antigua, oranges, bananas, and cocoa-nuts are not successfully produced when compared with the productions of other islands in the vicinity. The climate, on the other hand, however, is peculiarly adapted to the production of the pine-apple.

The average production of pine-apples amounts annually to about 800 barrels, of which about 500 barrels only are shipped. I am informed that the industry is decreasing; at any rate, the shipments have fallen off very considerable in recent years. The business could be greatly extended if possessed of capital and energy.

The season begins about the 1st of May and extends to the latter part of June. The prices for May are from \$4 to \$5 per 100, and in June fall to \$2 and \$3.

There is one kind only produced, which is termed the "black pine." The quality is unsurpassed. The fruit is so sweet and delicious that it needs but little, if any, sugar to prepare it for the table. The size is fair at the beginning of the season, and becomes smaller as the season advances; the climate and soil not being calculated to produce monstrous pine-apples deficient in flavor and richness.

As before stated, about 500 barrels are annually shipped. The bulk of the shipments go to England, covering at least 85 per cent. of the export.

The facilities for shipping to the United States are ample enough, but not of the proper kind. The steamers are devoted to the carrying of sugar, the gases of which are detrimental to pine-apples. The freight rates are much lower than to English markets, but the prices obtained in the United States have been unsatisfactory as compared with prices elsewhere. The business as carried on with the American market has been spasmodical, and I believe the fruit has not had a chance to establish a reputation. In conclusion, it seems to me that an opportunity presents itself for the opening up of this pine-apple district by some firm or company possessed of two small, swift steamers, capable of making a round trip in about 25 days between the United States and this and other fruit ports in the vicinity. (May 18, 1886.)

DOMINICA.

REPORT OF CONSULAR AGENT WILLIAM STEDMAN, OF DOMINICA.

I inclose a return for the last four years of oranges and cocoanuts exported from this island. The return only shows the quantity of oranges for which consular invoices were taken; smaller shipments varying from 20 to 80 boxes have been made, and no invoices taken. These shipments appear to have been admitted by the custom-house in New York without an invoice.

No return is obtainable for bananas, the quantity exported being very small. It is difficult to estimate the quantity of bananas that could be exported from the island;

if a regular demand was to spring up many thousand bunches would be obtainable, and in two or three years the quantity would probably be increased ten fold.

The price of oranges ranges from 7s. 6d. to 10s. per thousand; the crop extends from September to December. All the oranges exported are shipped to New York. The freight by steamers is 27½ cents per box, and 60 cents per barrel. During the orange season there is steam communication with New York about every three weeks. The voyage, in consequence of the steamers calling at two or three of the northern islands, usually occupies about 10 days. (May 18, 1886.)

Exports of oranges and cocoa-nuts from Dominica to the United States from 1882 to 1886.

	1882.*	1883.†	1884.	1885.	Total.
Oranges:					
Barrels	2,881	22	84	807	2,744
Boxes	1,523	2,978	5,982	3,861	14,844
Cocoa-nuts:					
Casks	25	8			33
Barrels	9	22½			31½
Boxes	1	15			16

* One cargo of 127,610 oranges was shipped loose this season.

† A severe hurricane passed over the island on the 3d of September, and destroyed nearly all the orange crop of 1883.

CUBA.

CIENFUEGOS.

REPORT OF CONSUL PIERCE.

All the fruits named by the circular are found in this consular district, and with reasonable skill and attention they might be produced in abundant quantities beyond the local demand; but substantially no fruits of any description, either in their natural or preserved state, are exported at this port. A year or two ago a number of shipments of pine-apples were made to New York; but the venture was a failure, owing to their decayed condition on reaching the New York market. Only one shipment (pine-apples) has been made to the United States this year. I submit the following information, however, concerning the fruits in general recognition here. I have undertaken to name the fruits in the order of the importance of the local product in the local markets; and it is well to add that in making the estimates I submit I have had to choose between conflicting statements or split differences.

Local and English or botanical name.	Approximate size of tree.	Rough approximate of annual crop of a tree in full bearing.	Approximate size and shape of ripe fruit.	Approximate color of ripe fruit.
				Exterior.
Platino (plantain):				
Macho.....	10 or 12 feet high..	25	Ten or twelve inches long; banana shape.	Yellow.....
Hembra	do	75.....	Three-fourths the size of macho.	do
Platanito (banana):				
Indio	do	50	Two-thirds the size of macho plantain.	do
Puyat	do	75	do	do
Enano	5 or 6 feet high ..	125	do	do
Morado	10 or 12 feet high..	50	One half the size of macho plantain.	Purplish
Manzano	do	75	One-third the size of macho plantain.	Yellow
Guineo	do	75	One-third the size of macho ..	do
Datil	do	100	One-sixth the size of macho.	do
Salvage *	do	50	Two-thirds the size of macho.	do
Guayabas (guava):				
Del Peru.....	Peach-tree size ..	400	Peach size and shape ..	do
Blanca.....	do	100 pounds ..	Hen-egg size; oblong ..	do
Colorada.....	do	do	Larger than the blanca, and round.	do
Amarilla	do	do	Hen-egg size, and round ..	do
<i>Citrus family.</i>				
Maranga (orange):				
China.....	Pear-tree size ..	1,000	Full-size orange; thin rind.	do
Lima	do	do	do	do
Cafel	do	do	Full-size orange; thick rind.	do
Moreira.....	do	do	Full-size orange; usual rind.	do
Agria.....	do	do	Full-size orange; thick rind.	do
San José†.....	Only 3 or 4 feet high.	100	Smaller-size orange; thin rind.	do
Limon (lemon):				
Frances agrio ..	Peach-tree size ..	1,000	Orange-size and oblong; thin rind.	do
Frances dulce ..	do	1,000	do	do
Agrio	do	2,000	Hen-egg size and round; thin rind.	do
Lima (lime)	do	1,500	Hen-egg size and round; thick rind.	do
Cidra (citron) ..	do	75	Over cocoonut size and oblong; thick rind.	do
Toronja (shaddock):				
Agria	do	150	Larger than the cidra, and round.	do
Dulce†.....	do	150	Larger than an orange, and round; thick rind.	do
Piña (pineapple):* †				
Piña de Cuba ..	3 feet high, and bushy.	1	Full-size pineapple ..	do
Piña de Raton ..	do	1	Small-size pineapple ..	do
Cocos (cocoanut) †				
Nispero (sapadillo)	Pine-tree size ..	200	Usual size cocoanut ..	Brown
	Apple-tree size ..	1,500	Peach size and round ..	Dove
Mamey (mammes):				
Santo Domingo ..	do	200	Cocoanut size and round ..	Brown
Colorado.....	do	300	Less than cocoanut size and oblong.	do
Aguacate (alligator pear.)	do	500	Cocoanut size; oblong ..	Green, also purple.
Guanabana (sour sap).	do	250	Double the cocoanut size; oblong.	Green
Mango (mango)	Maple-tree size ..	2,500	Orange size; round ..	Green and yellow.
Manga	Apple-tree size ..	2,000	Goose-egg size; oblong ..	Yellow

* It grows wild.

† Scarcely known.

‡ Planted about 3 feet apart; cultivated with hoe; each sprout produces one pineapple; a root will produce fresh sprouts for several years.

Local and English or botanical name.	Approximate size of tree.	Rough approximate of annual crop of a tree in full bearing.	Approximate size and shape of ripe fruit.	Approximate color of ripe fruit.
				Exterior.
Mamon (custard apple).	Apple-tree size....	150	Cocoanut size; round	Greenish-yellow.
Anon	Peach-tree size....	150	Orange (large) size; round.	Greenish.....
Ciruelas (plum, Colorado.	do	1 barrel	Plum size; elongated	Red
Amarilla.....	do	do	do	Yellow
Mamoncellos(yineps)	Apple-tree size....	5 barrels	Crab-apple size; round....	Green
Marañon (kuso)	Peach-tree size....	250	Small pear size; elongated.	Red and also yellow.
Tamarindo (tamarindus).	Maple-tree size	4 barrels	Honey-suckle shape; 5 inches long.	Brownish
Caimito (star apple)*.	Apple-tree size....	1,000	Small orange size; round..	Green and also purple.
Café (coffee)†	6 or 8 feet high....	8 pounds	Usual size coffee	Usual color
Granada (pomegranate).	Less than peach-tree size.	50.....	Orange size and shape	Reddish green ..
Fruta Bomba (papaw)	8 or 10 feet high, and slim.	10.....	Size and shape of large muskmelon.	Yellow.....
Papaya Cimarrona (wild papaw).	do	100	Apple size; elongated	do
Camstel (akee).....	Apple-tree size....	800	do	do
Cacao (cocoa)‡	Pear-tree size....	40 pounds ..	Peach size; round	Brown
Hicaco (bread-nut) ..	Peach-tree size....	1 pound	Crab-apple size and shape.	Reddish apple...
Higos (fig).....	Smaller than peach-tree size.	100	Crab-apple size; elongated.	White and also purple.
Datil (date)§.....	Pine-tree size	40 pounds..	Usual size dates	Yellow
Poma Rosa (rose apple).	Maple-tree size....	100 pounds	Crab-apple size and shape.	Yellowish.....
Jagua (genipa Americana).	Peach-tree size....	100	Small orange size and shape.	do
Pitahaya (cactus grandifloria.)	Large size vine....	100	Pear size; elongated	Reddish.....
Jefira (cactus).....	do	100	do	Yellowish.....
Corofo (cocoas crispas).	Pine-tree size.....	200 pounds.	(Nut) crab-apple size and shape.	Greenish.....
Tunas Blancas (marsh mallow, white)||	Less than peach-tree size.	25.....	Ordinary pear size and shape.	Yellowish.....
Punas Coloradas (marsh mallow, red)||	.....do	50	do	Reddish.....
Uva de la caleta|| .....	Peach-tree size....	800	Crab-apple size and shape.	Greenish.....
Uva (grape)¶	Vine	30 pounds ..	Usual size grapes	Green and also purple.

* Another variety (caimitillo) much inferior.

† Probably over 95 per cent. of the coffee consumed is imported.

‡ Shipped to this place from Santiago de Cuba.

§ Inferior to the Spanish date.

|| Grows near the coast.

¶ Rarely seen.

Approximate color of ripe fruit.	Approximate taste of ripe fruit.	Use.		Approximate price in season at Cienfuegos.	Wild or domestic.	Quantities.
		Principal.	Secondary.			
Interior.						
Yellowish-white.	Sour-sweet.	Eating .....	.....	\$1 per 100	Domestic..	Considerable.
White	Sweet	do .....	.....	do	do	Do.
Yellowish	Sour-sweet	do	Sweetmeats	\$1 for 25 pounds	do	Do.
do	do	do	do	do	do	Do.
Yellowish-white.	do	do	Beverage	\$2 per barrel	do	Do.
Yellowish	do	Sweetmeats	Eating	50 cents per 100	do	Do.
Brown	do	do	Beverage	\$2 per barrel	do	Do.
Whitish and also purple.	Sweet	Eating .....	.....	\$1 per 100	do	Do.
Usual color	Usual taste	Beverage .....	.....	\$17 for 100 pounds	do	Very little.
White and also red.	Sweet	Eating .....	.....	\$1 per 100	do	Scarce.
Yellow	do	do .....	.....	\$15 per 100	do	Do.
do	do	do .....	.....	\$1 per 100	Wild	Large quantities.
do	do	do .....	.....	do	Domestic	Rather scarce.
Brownish	Bitterish	Beverage .....	.....	\$20 per 100 pounds	do	Very little.
Yellowish-white.	Sweet, puckering.	Sweetmeats .....	.....	\$3 per barrel	do	Rather scarce.
White and also purple.	Sweet	Eating .....	.....	25 cents per dozen	do	Very scarce.
Yellowish	Bitter-sweet	Sweetmeats .....	.....	\$2 for 25 lbs.	do	Do.
do	Sweet	Eating .....	.....	\$1 per 25 lbs.	Wild	Large quantities.
do	do	do .....	.....	\$1 per 100	do	Do.
Pinkish	do	do .....	.....	50 cents per 100	do	Do.
Yellowish	do	do .....	.....	do	do	Do.
White	do	Oil	Sweetmeats	\$1 per 25 lbs.	do	Rather scarce.
Whitish	do	Eating .....	.....	\$1 per 100	do	Do.
Purplish	Smarting	Making ink .....	.....	25 cents per 100	do	Do.
Whitish	Sour-sweet	Eating	Vinegar	75 cents for 25 pounds	do	Considerable.
Greenish	Sweet	do .....	.....	50 cents per pound	Domestic	Very scarce.

PLANTAINS AND BANANAS.

The plantain and banana belong to the same genus (*Musaceae*). The plantain is cooked in its green and ripe state and in a variety of ways. It comes nearer affording a satisfactory substitute for both meat and bread than probably any other vegetable product. I am told that the fiber of the tree can be made into sewing-thread by manipulating it with the hand and without the use of machinery; and that the leaves cut up may be used as a mixture of clay mortar for building purposes. The tree may be grown from sprouts set out or from planting all or part of the germ root. They are placed 3 or 4 yards apart according to the strength of the soil, and grow better in new soil than old. They are usually planted in the spring season, and each stalk will produce one bunch. When the bunch is gathered the tree, or rather stalk, is cut down, so as to increase the vigor of the other stalks in the same hill. The foliage of the fallen stalk also serves as a fertilizer for the growing sprouts. The germ root (Name) once planted will continue sprouting for many years. But usually not more than four or six sprouts are allowed to be growing in the same hill at the same time, and these are in advance one of the other, so that only one bunch (each stalk produces one bunch and no more) ripens at a time. The cultivation is substantially the same as that given to corn-fields in the United States. If the plantain tree is cut down after it produces its bunch of fruit it will not grow up again, but if cut down before it produces it will grow up again with wonderful rapidity. All that I have said of the plantain tree may be said of the banana. It is only a different variety of the same tree, with smaller and more delicate fruit. The banana is more palatable in the uncooked state than the plantain, but the former is much the more valuable fruit. There are several different kinds of bananas found here, but it would be quite difficult to give more than the general idea of their differences as set forth in the above table.

THE GUAYABA.

The guayaba in point of merit justly stands next to the plantain. It is a very delicate and aromatic fruit. Its smell appears to be very much like that of the American May-apple. It is both palatable and nutritious and acts as a restringent. There are four kinds named in the table, though I am told that in other parts of the island there is another guayaba found quite different to these, known as "guayaba del pinal," growing on a very much smaller tree and in bunches, and about one-fourth the size of those mentioned. Of those named in the table the Peruvian is cultivated and the others grow wild in the woods, and furnish valuable mast for the hogs to feed on. The "Colorado" (red) has probably a more pronounced, certainly a more, acid, taste than the rest. Aside from the shape, size, and color mentioned in the table, this fruit has a thin rind and is full of small, hard seeds. The tree, which is well branched, and usually from 15 to 20 feet high, bears a small, pretty white flower which is very fragrant. The wood is very soft and of very little use. Guayaba sweetmeats are the characteristic sweetmeats for table use in Cuba. I should estimate that they constitute 75 per cent. of the table sweetmeats used in the island. They are manufactured in large quantities at Esperanza, a station on the Santa Clara Railroad, and are also extensively made for home use by private families. The guava sweetmeats embrace several varieties, principally paste, jelly, and a liquid mixture called "cachurra."

ORANGES.

Oranges are cultivated with more skill and industry in the United States than here, and the character and uses of the fruit are as well known there as here, so that it would seem unnecessary for me to attempt to add anything to the information already possessed by our fruit-growers. I will say, however, that the usual process is to plant the seed, and when the sprouts are 15 or 20 inches high withdraw them from the bed and transplant them 6 or 8 feet apart. Some say, though others ridicule the idea, that the planting and transplanting should be done in the second (crescent) quarter of the moon. The trees come into bearing at three years of age. The chief enemies of the orange tree here are the "bibijagua" and the "guagua." The bibijagua is a large ground ant which goes on to the tree in vast numbers and strips it of its leaves. They may be followed to their den and burnt out, or, as a preventive measure, a small track may be dug around each tree and filled with tar or pitch. The guagua is a parasite of a whitish color that sprinkles itself over the tree. It may be driven away by putting powdered sulphur on the branches of the tree. I am told, however, that many years ago the attack of the guagua was particularly injurious to the orange trees of this part of the island, which largely accounts for the comparatively few trees now in existence. It seems that it is much less injurious than formerly. The "comejen" only attack the tree when it is old. If the nest of this insect is found on a branch of the tree it is well to cut the branch off and destroy it. I am

told that it may be destroyed or driven away by putting soap lye and arsenic on the comejen and tree, and ashes sometimes put around the tree. I have never seen a comejen that feeds on the bark of trees, such as that of which I write, but I have seen a "house comejen," which is much smaller and much less objectionable, and it was to me a thing of considerable curiosity. It had got between the roof and ceiling of a house and worked through the plastered ceiling and to the length of one or two feet on the side of the wall. It presented the appearance of a large size black twine string hanging on the wall. No one would ever have thought, except for the fact that it grew longer day by day, that there was any animal life connected with it. It was brushed away with a broom from the ceiling down, but nevertheless it continued its growth day by day in the same direction. Again it was brushed away, and after coming down only a few inches it ceased to grow in that dangerous direction. The black string was nothing more than fine dirt with a hollow in its centre in which the insect lived. This black string is their house, which they carry with them wherever they go. The comejen of the tree will wind around the body of the tree until the tree is often increased to apparently twice its size, withers, and dies.

COCOANUT.

The cocoanut when ripe and dry is made into sweetmeats, but when green the "milk" of the cocoanut is much better to drink and the "meat" more palatable. The "milk" (water) of the green cocoanut is highly valued for its effect on the kidneys and is one of the most popular café drinks. The fruit grows at the top, where the limbs fork with the body of the tree.

There are, in addition to the above, many wild fruits and berries, which, though found in more or less abundance through the woods, are of little or no importance, and while here and there a Brazilian pear tree or a bread-fruit tree or other imported trees may be found, yet they are so "few and far between" as to be of substantially no importance.

WM. P. PIERCE,
Consul.

UNITED STATES CONSULATE,
Cienfuegos, May 5, 1886.

BARACOA.

REPORT OF COMMERCIAL AGENT OON.

The orange has been grown here to a considerable extent many years since, but for some time past the production has dwindled down to nearly nothing. It seems that the climate is too humid, and various insects are very destructive in most of the plantations. The production of the bananas and cocoanuts has been found more profitable, hence the orange has been allowed to lose its former standing.

To the pine-apple there is no attention given beyond the necessities of home consumption.

In reference to the banana, the prices range from 40 to 75 cents per bunch delivered on board, all port charges paid on vessel and cargo.

The price generally during the fruit season, which includes the months of March, April, May, June, and half of July, is 50 cents per bunch, which means a first class bunch, while second-class bunches go "two for one." In regard to the annual production, increase and decrease during the last five years, the inclosed statement will present a full history of the banana culture at this port.

There are two varieties of the banana now cultivated for exportation, namely, the red banana and a yellow variety called the "Johson," which is, in fact, the yellow banana, brought from Jamaica by a man of the name of Johson, hence the name of "Johson banana."

The price of the cocoanuts has been for many years \$20 per thousand, delivered on board, all charges and expenses paid.

The shipments of these fruits are made to the United States exclusively.

The facilities for shipping to the United States are good, and the freights by British and Norwegian steamships are much cheaper this year than at any previous time, probably less than 25 cents a bunch for bananas and less than ever before per ton for the cocoanuts.

There is an extensive forest country bordering on that now cultivated, where new plantations may be opened on Government land, and presents a fine opportunity for an increased production, but I would advise our people in the United States to invest their capital in almost any enterprise at home in preference to the growth of either the cocoanuts or the banana here. The only enterprise I can recommend in relation to either of these fruits is the manufacture of the cocoanut oil, and that should only be attempted when accompanied by a large capital.

DATUS E. COON,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Baracoa, April 20, 1886.

Exports from the port of Baracoa to the United States of America during the last five years; also the number, nationality, and tonnage of vessels employed in this trade and the proportional increase or decrease of each calendar year.

EXPORTS.

Years.	Bananas.			Cocoanuts.		
	Total bunches.	Increase.	Value.	Total.	+Increase. -Decrease.	Value.
		<i>Per cent.</i>			<i>Per cent.</i>	
1881.....	312,994		\$259,386 70	4,949,024		\$98,980 48
1882.....	480,889	21.80	410,665 89	6,377,547	+28.83	127,547 70
1883.....	673,944	40.00	538,859 21	7,842,966	+22.97	156,857 32
1884.....	886,544	31.54	607,571 39	8,793,528	+12.25	175,870 56
1885.....	1,107,997	25.30	744,564 46	6,892,710	-21.44	137,854 20

TOTAL VALUE OF EXPORTATION INCLUDING CHARGES.

Years.	Cocoanut oil.	-Increase. +Decrease.	Miscellaneous goods.	Value.	Increase.
		<i>Per cent.</i>			<i>Per cent.</i>
1881.....	\$55,813 28		\$1,972 72	\$416,153 20	
1882.....	27,082 26	+ 51.48	1,068 82	566,364 83	38.08
1883.....	10,626 26	+ 60.76	700 42	704,943 21	24.47
1884.....	32,934 50	-209.00	598 50	816,952 61	15.87
1885.....	37,850 10	- 14.08	498 50	920,767 87	12.72

VESSELS EMPLOYED AND TONNAGE.

Years.	American.				Foreign.			
	Vessels.		Total tonnage.	+Increase. -Decrease.	Vessels.		Total tonnage.	+Increase. -Decrease.
	Sail.	Steam.			Sail.	Steam.		
				<i>Per cent.</i>				<i>Per cent.</i>
1881.....	151		20,645		17		1,850	
1882.....	205	5	34,001	+64.89	13		1,400	- 23.14
1883.....	221	14	40,967	+20.47	16		1,650	+ 17.85
1884.....	122	16	31,545	-23.00	7	49	34,700	+2000.00
1885.....	48	16	16,622	-47.36	2	94	48,068	+ 40.25

HAVANA.

REPORT OF CONSUL GENERAL WILLIAMS.

ORANGES.

From inquiry among shippers I learn that the exports of oranges from Havana during the past year amounted to about 38,000 barrels, of which 30,000 barrels were shipped to New York, 4,000 to New Orleans, and 4,000 to Key West. This fruit ripens and begins to come into market about the 1st of December each year; the season lasts through April.

The crop is less now than thirty years ago, because of the destruction of the many small neighboring farms that has taken place during the interval to give way to the planting of sugar-cane, which up to within a few years past paid better. But now that the beet-root sugar of France, Germany, Austria, Hungary, and Russia has taken the European sugar market from Cuban sugars, more attention is being given to the cultivation of other crops, and it is to be expected in consequence that the orange crop of this immediate vicinity will greatly increase for exportation to its only consuming market—the United States. The price averages \$2 per barrel of about 360 oranges each, the freight to the United States varying from 50 to 75 cents per barrel.

PINE-APPLES.

The annual exports of pine-apples from this consular district, comprised of the surplus over local consumption, reach about 60,000 barrels, each containing 35 pines of first, 45 of second, and 48 to 50 of third class, all of which go to the United States and principally to New York. The proximity of Cuba to the United States and its great distance from Europe, and therefore greater time required for the transportation—the crop being a perishable one—are circumstances that make the United States necessarily the only consuming market for Cuban pine-apples. This crop is also on the increase for the same reasons stated in regard to oranges. It ripens and is marketed during the months of June, July, and August. The average price per barrel, ready for shipment, is \$6, \$5, and \$4, Spanish gold, for first, second, and third qualities, respectively.

Freight to the United States varies from 50 to 75 cents per barrel.

OTHER FRUITS.

Of other fruits, such as bananas and cocoanuts, comparatively few are shipped from this port. Most of the cocoanut trees in this district have been killed within the past few years by an insect. The production of bananas is but slightly above local demand, though this district, like every other one in Cuba, is capable of producing them in immense quantities.

SHIPPING FACILITIES.

The present facilities for shipping fruit to the United States by regular lines consist of five steamers per week, two to New York, two to Key West, and one to New Orleans.

RAMON O. WILLIAMS,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Havana, April 16, 1886.

SANTIAGO DE CUBA.

REPORT OF CONSUL REIMER.

Merchants here state that oranges are not an article of export because of the low prices obtainable in other countries. No doubt if the trade were carried on on a large scale it could be made a paying business, the soil and climate being particularly adapted for orange-growing. The woods in this province abound in wild oranges, which, of course, are both sour and bitter. The cultivated orange attains a large size, and is particularly sweet and juicy, but hardly enough for home consumption are grown.

The export trade in bananas of this province is entirely limited to Baracoa and vicinity, a city not within my jurisdiction. On this southern side of the island the only bananas grown, and for home consumption, are the Guineos, which are a very small but good fruit, barely 3 inches long, and yellow in color. Besides, this plantains are grown in large number, constituting a chief article of food with the natives. None are exported.

PINE-APPLES.

Two species of pine-apples are grown here, the *Piña cimarrona*, and the sugar-loaf pine-apple. The *Piña cimarrona*, although not so sweet and of much coarser fiber, is the only kind exported. Merchants state that they are preferred to the sugar-loaf pine in the United States, which seems most strange, as the only thing in their favor is their larger size. The only point of export is New York. At the low prices that pine-apples bring in New York, and considering the expense of preparing for market and shipping, I doubt whether the producers here would find it to their interest to increase the production. Besides this the United States impose an import duty. The land on this side of the island is well adapted to pine-apple growing, and the production could be increased immensely with great facility, were it not for the disadvantages above stated. It is almost impossible to estimate the annual production, as the home consumption cannot be determined. The season begins in April, and the first pine-apples are as high as ten cents each. Then as the season progresses and the supply becomes large, pine-apples for export are sold as low as three cents each. This is chiefly in May and June, the season lasting until July. Freight by steamer to New York \$1 per barrel, containing from 27 to 30 pine-apples.

COCOA-NUTS.

Cocoa-nuts are produced here to a large extent, the annual production being estimated at 2,000,000 nuts. Of these 6,427 bags, containing about 50 nuts each, were exported from this port during the last year. The balance is either sent to island ports, where cocoa-nut oil factories exist, or else is lost. Only cocoa-nuts with the outside fiber removed are saleable in the United States. The shipment is entirely confined to steamers, and these charge \$5 per 1,000 and 5 per cent. primeage for freight to New York. To England the freight is £1 per 1,000, and to Spain, sailing vessel, \$8; steamer, \$10 to \$12. Prices vary little, as the fruit is exported all the year round. Cocoa-nuts with the fiber completely removed cost \$17 per 1,000; but in their natural state \$15. In the latter way they are sent to Spain, and often to England. As regards quality, all cocoa-nuts that are heavy and contain milk are sale-

able, and no particular species exist. To Spain, cocoa-nuts are shipped with the outer fiber on, keeping better and sweeter in that condition, and not so easily breaking.

Direct shipping facilities between this port and the United States are confined to sailing vessels and to the Ward line of steamers, leaving semi-monthly in winter and monthly in summer. The Juragua iron mines send weekly steamers to Philadelphia, but these steamers take only the iron ore of the company. Semi-weekly, and occasionally oftener, communications exist between here and Havana by both north and south coast steamers. Once a month we have a direct steamer from Liverpool; also once a month the French packet from St. Thomas and Jamaica, connecting at St. Thomas with the transatlantic packet. We have semi-monthly connection by steamer with Porto Rico, and the same steamers going to and coming from Havana put us in direct communication with all ports of importance on this island.

Cocoa-nuts exported during 1885: To New York, 2,521 bags; Liverpool, 440; London, 1,200; Bremen, 5; Barcelona, 1,150; Spain, 1,111; total, 6,427 bags.

Pine-apples exported to New York: 1883, 2,300 barrels; 1884, 1,850 barrels; 1885, 362 barrels; first quarter of 1886, none.

OTTO REIMER,
Consul.

UNITED STATES CONSULATE,
Santiago de Cuba, April 19, 1886.

CARDENAS.

REPORT OF COMMERCIAL AGENT JAMES M. CHURCHILL.

This consular district makes no shipments of oranges, bananas, pine-apples, or cocoa-nuts. The cultivation is almost entirely given to planting sugar-cane. Neither do we raise any coffee in this district. All the labor goes to the corn-fields, and of fruits and vegetables we get barely enough to supply daily consumption. (April 5, 1886.)

SAGUA LA GRANDE.

Commercial Agent D. M. Mullen, Sagua la Grande, Cuba, reports:

All the fruits named are grown here, but only for home consumption. The only industry of importance in this district is the cultivation of the sugar-cane. (April 13, 1886.)

HAYTI.

REPORT OF CONSUL THOMAS SIMPSON, PUERTO PLATA.

None of the fruits named in the Department's circular are grown in this district for export, although no good reason exists why they should not be, as the soil and climate are in every way favorable, and the facilities for shipping to the New York market good. The reasons for this state of affairs are, in my opinion, lack of enterprise and capital, and I believe if parties with means should embark in it the tendency would be to open up a good trade, as there would then be an inducement to the small farmers to unite and plant, which individually they cannot do to advantage, as there is no market for the fruit on the scale that it is at present raised. (May 5, 1886.)

CAPE HAYTIEN.

Consul Goutier, Cape Haytien, writes, on June 10, 1886 :

No exports of fruit are made from Cape Haytien. Last year a Haytien firm imported nearly 10,000 banana plants from Jamaica—a quality much valued there—and had them transplanted about seven miles in the country, with the view of raising bananas for exportation. I fear the experiment will not be successful, as the fruit must be carried in carts over five miles of indifferent roads, then loaded on lighters to be put on board. This involves too much rough handling.

MARTINIQUE.

REPORT OF CONSUL WILLIAM A. GARESCHÉ, OF MARTINIQUE.

It is impossible to give the average annual production of oranges, pine-apples, bananas, and cocoa-nuts in this island, as no statistics are kept. It is about the same yearly. That of oranges has fallen off somewhat, as many of the orange groves were cut down in the halcyon days of sugar markets to utilize the fields for cane. Oranges can be purchased at the rate of about six to ten for a cent. The season lasts six or seven months in the year. Bananas last the year round, constantly reproducing, and they can be purchased at from 70 cents to \$1 per bunch. The season for pine-apples lasts about four months each year, and in the height of the season can be purchased for 25 to 75 cents per dozen, according to size and quality. Cocoa-nuts grow the year round, and can be purchased for a song, the people here placing no value on the meat of the nut, caring only for the milk, which is a favorite and refreshing tonic in the morning. All these fruits grow in large quantities, but none of them are shipped save a nominal portion of the pine-apples, which are sent to France. The production can be largely and readily increased. (May 14, 1886.)

NEW PROVIDENCE.

REPORT OF CONSUL McLAIN.

The following report is based upon official statistics and upon communications received from growers and shippers of fruit, and is believed to be as accurate as can be made. The growth of bananas, cocoa-nuts, and oranges is not as yet extensive enough to be of great commercial importance, but I have given them due consideration. The cultivation and shipment of pine-apples, however, are an industry of prime importance to this colony, much capital and many people being employed therein, and the failure or success of the crop from year to year having a serious effect upon the material prosperity of the Bahamas. The fruit was first introduced into these islands about a century ago, and for the last forty years has been an article of export to the United States. The period covered by this report refers especially to the last six years, that is to say, from 1880 to 1885, inclusive, since present conditions, and not those of the far past, are what is probably sought for.

AVERAGE ANNUAL PRODUCTION.

The average yearly production of the fruits in question cannot be arrived at with absolute accuracy; but, knowing what has been shipped, and estimating the quantity consumed at home and what has been lost for want of demand, it is thought the following statement is not far from correct :

Pine-apples.....	number..	6,230,000
Oranges.....	do.....	2,500,000
Cocoa-nuts.....	do.....	25,000
Bananas.....	bunches..	55,000

INCREASE OR DIMINUTION OF PRODUCTION.

The production of bananas does not appear to be on the increase, unless more are used of late than formerly for home consumption, which there is no reason to suppose, for the average shipments for the last three years are only 17,000 bunches, as against an average of 27,000 bunches in 1880-'81-'82. Cocoa-nuts have increased, the average shipments in 1883-'84-'85 being 28,000, as against 21,000 in the preceding ternary. Oranges have seriously decreased, the estimated crops of 1880-'81-'82 combined being about 10,600,000; whilst in 1883-'84-'85 they reached only 4,760,000. The absence of prompt shipping facilities militates against the growth of bananas, they being more perishable than cocoa-nuts. A severe hurricane in September, 1883, damaged the crop for a year to come, and will partly account for the decrease of bananas about that time. They are an important article of food, and largely consumed in the islands. The decrease in oranges is largely attributed to the ravages of the "scale" bug or insect, which visited the colony in 1882-'83, destroying many trees, and, in some instances, whole orchards. The pine-apple crop remains very steady in production, being, during the last six years, estimated as follows:

1880	4,860,000
1881	5,560,000
1882	3,052,000
1883	6,108,000
1884	5,400,000
1885	7,400,000
Annual average	6,230,000

PROSPECT OF ENLARGED PRODUCTION.

There is no doubt that the growth of bananas, cocoa-nuts, and oranges can, and will be, extended in the Bahamas, but I have doubts whether there will ever be a very large increased production, because it is not very clear that it can be done with decided profit. Whilst it is true that these fruits are often raised here of good size, appearance, and flavor, and whilst they stand very well in the markets, it is equally true that the trees do not thrive here with that vigor and luxuriance, nor bear as prolifically as do those of many of the other West Indian islands and of Central America, or perhaps of Florida. To grow them here requires more labor with less returns, and the proximity of these islands to the United States is by no means a compensation for the richer soil and more tropical climate of these other localities.

The Bahamas are in the tropics only as it were by courtesy, and their soil, whilst rather productive, is scanty and thin, and interspersed with rock. There are but few large plantations in this colony devoted to these three fruits, what are raised being mostly grown in small orchards by farmers in very moderate circumstances, or by land owners about their small cabins, and without much labor, skill, or care being bestowed upon them, and often as a secondary or subordinate method of adding a few dollars to their ordinary business. Very few full cargoes of oranges are shipped away—and none at all of cocoa-nuts and banauas—for the reason that too few are grown to enable shipmasters to calculate with certainty upon a full cargo if they should call. For some years past there has been a larger planting of cocoa-nuts, and also of oranges, the latter induced by the ravages of the scale insect, to supply the trees

then destroyed. When these trees shall become bearers, the olden time averages of 4,000,000 or 5,000,000 oranges per annum will be revived; cocoa-nuts too will be much increased.

The trade in pine-apples is large, being, next to the sponge traffic, the most important industry of the colony. It is the opinion of the most experienced judges that it cannot be increased to any very great extent, having already reached about the maximum, and being so hazardous a business as to deter many from entering it. The land best adapted to the successful cultivation of pine-apples is limited in extent in the Bahamas, and as the plant is exhaustive to the soil, a field can be used only for a short period of time, when it must be permitted to lie fallow for from eight to ten years in order to recuperate. In this way much land once cultivated for pines is lying barren and useless at present. Upon the question of supplying exhausted elements by the use of manures and fertilizers, and thus obviate the necessity of letting the fields lie fallow so long, there seems to be a rather general opinion against it; but I do not think the experiment has been fairly tried. It succeeds in other crops, and I cannot see why it will not avail in pine-apples. It seems to be the only way to insure increased production in this colony, where suitable soil is of limited extent.

PRICES AND SEASON OF SHIPMENT.

The prices of fruits in this colony do not fluctuate enough to enable me to report any monthly average of prices, so that I can only speak of prices in a somewhat general way. Previous to 1881 the usual price paid for oranges was from \$7 to \$8 per thousand on shipboard; but for several years there has been a gradual decrease of prices until the current rate in 1885 was from \$4 to \$5 per thousand.

Bananas are pretty firm year in and out at from 20 to 25 cents a bunch, and cocoa-nuts seldom vary from \$18 to \$20 per thousand. Pine-apples for several years past have averaged at about these figures, viz: for first cuttings, 42 to 48 cents per dozen; for second cuttings, 36 cents per dozen; third cuttings, 24 to 30 cents per dozen; and scrapings about 20 cents. The orange crop is mostly shipped in October, November, and December. The pine-apple season is embraced between the middle of April and the middle of August. Bananas and cocoa-nuts are in bearing the year through, but more are exported from here during the winter months, and then largely to the southern ports of the United States.

VARIETY AND SIZE OF FRUITS.

There are two varieties of oranges grown, the China and the Seville. The cocoa-nuts are from seed obtained from Jamaica, Cuba, and Central America, but have no distinctive names. The bananas are known as the Jamaica banana, the red banana, and a small variety called the dwarf. Pine-apples are the scarlet or Cuban pine and the sugar loaf variety, the former being the best for shipping. The average weight of the pine-apples is about 3½ pounds. There is a great variety as to size in the cocoa-nuts and oranges. The flavor of all Bahama fruits is considered to be very good, and the quality as good as the average.

AVERAGE ANNUAL SHIPMENTS.

Under this head I have prepared tables of actual shipments, &c., from 1880 to 1885, inclusive, which will give the full information desired upon these points:

Shipment of bananas, cocoa-nuts, and oranges to the United States.

Years.	Bananas.		Cocoa-nuts.		Oranges.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	<i>Bunches.</i>		<i>Number.</i>		<i>Number.</i>	
1880.....	20,000	\$4,127 00	9,000	\$160 00	3,500,000	\$21,000 00
1881.....	20,700	3,956 00	12,880	233 62	4,125,000	24,450 00
1882.....	25,100	4,744 00	36,472	701 00	2,565,000	17,037 00
1883.....	13,603	2,847 00	30,523	593 00	497,000	3,026 00
1884.....	10,566	2,077 00	17,741	340 60	1,854,000	9,835 00
1885.....	15,358	3,007 00	26,179	530 00	1,920,000	8,529 00

Shipment of pineapples and preserved pine-apples.

Years.	To United States.				To England.			
	Pine-apples.		Preserved pine-apples.		Pine-apples.		Preserved pine-apples.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	<i>Dozen.</i>		<i>Cans.</i>		<i>Dozen.</i>		<i>Cans.</i>	
1880.....	330,000	\$145,100	200,000	\$29,970	10,000	\$6,000		
1881.....	323,000	109,000	287,000	40,000	40,000	29,076	73,872	5,960
1882.....	462,371	140,481	707,856	42,883	25,500	18,350	140,184	10,500
1883.....	349,836	151,747	553,096	32,080	25,600	18,614	58,968	6,248
1884.....	310,428	140,950	533,472	36,040	21,000	14,843		
1885.....	424,065	224,161	703,968	43,297	31,900	23,285		

There are several factories which during the season preserve pine-apples in cans. They have consumed in this way about 5,725,000 pine-apples during the six years, which have been included in our previous estimates of production.

FACILITIES FOR SHIPPING.

A line of steamers running between Nassau and New York, fortnightly in winter and monthly in summer, affords a fair opportunity to ship that portion of the fruit grown on this island or near by; but this is only a small part of the crop, and these trips are hardly frequent enough to be largely relied upon for fruit shipping purposes. Some small British schooners do a moderate trade, carrying most of the bananas and cocoa-nuts shipped, between the different islands and the ports of Key West and Jacksonville, Fla., Brunswick, and Savannah. The pine-apple crop is of enough importance to warrant the sending out, from New York and Baltimore, of numerous vessels, some with cargoes and some in ballast, for the purpose of moving the crop to those cities. These vessels are small, speedy schooners, of from 75 to 150 tons burden, able to make the run from the islands to these northern ports in from four to seven days, two-thirds of them being Baltimore pungies and New England fishing vessels. The fruit is loaded in bulk, from 3,000 to 4,000

dozen pine apples making an average cargo. The number of trips performed during the season of three months by this fruit fleet will average about eighty. A few colonial vessels also engage in this carrying trade.

A few thousand dozen pines are sent to London each season, four or five British top-sail schooners engaging in the trade. The business is very small, owing to the great distance to England. For English shipment the plant has to be cut off at the root, and plant and fruit are shipped unseparated. This makes a bulky cargo with little fruit, and causes the loss of a plant.

As the principal and almost only fruit market of the Bahamas is the United States (the trade being beneficial to both countries, since we get their produce and send them in return for it quantities of provisions and manufactured goods), and as nearly all the fruit goes in vessels under special charters, there can scarcely be said to be any freight rates on fruit to the United States to be compared with rates to other countries.

THOS. J. McLAIN, JR.,

Consul.

UNITED STATES CONSULATE,
Nassau, N. P., April 20, 1886.

PORTO RICO.

REPORT BY CONSUL EDWARD CONROY, OF SAN JUAN, PORTO RICO.

Neither in the district of this consulate nor in that of the consular agencies dependencies of same is there sufficient fruit grown or exported to become of commercial importance. Cocoa-nuts are at times in small quantities shipped in Spanish sailing vessels for the Mediterranean, but more, I am informed, to fill up or as dunnage than the object of profit.

The district of Mayaguez has a large and increasing fruit trade with the United States. There are a number of fast sailing American schooners in the trade. Oranges and pine-apples are the varieties principally shipped. The pines are very large, but more adapted for preserves than for eating in their crude state. The oranges are very large and sweet, are said to keep well on the voyage, and are preferred to those received from Baracoa, Cuba, by fruit dealers.

The United States is the only country to which fruit is exported. The extreme low price of sugar the last three years has in many cases ruined the cane-planters, and I am informed that many cane estates in the district of Mayaguez will be dedicated to the production of fruit. Oranges and bananas are in season the whole year round. Pine-apples are only very abundant in the months of October, November, and December. During these months there are a number of American schooners come to the port of Mayaguez from New York and Boston, in ballast, to load with fruit to supply those markets during the Christmas holidays.

The great want of good roads in this district, and all the eastern and southeastern districts of this island, is the prime cause of so little attention given to the culture of tropical fruits. Rice, sweet potatoes, and very many other vegetables that would produce abundantly, if once planted, are neglected. The farmers only cultivate enough for their own consumption, as they in almost every case will tell, when asked why they do not raise more fruit or produce, that it costs them more to transport their products than they realize for them when they get them to a market. Still, this capital is abundantly supplied with oranges, bananas, and other tropical fruits the entire year round. (May 10, 1886.)

SAN SALVADOR.

REPORT BY CONSUL J. MAURICE DUKE, OF SAN SALVADOR.

I have to report that there is no export from the Republic of Salvador of oranges, bananas, pineapples, or cocoanuts, although all are produced abundantly in the country. It is impossible to estimate the annual production of the fruits in question, which form no branch of the country's trade; but for home consumption bananas and plantains are largely cultivated by the natives, with whom they are an important article of food.

The climate and soil of Salvador are thoroughly adapted to the production of all tropical fruits; but the principal obstacle to any scheme for extending this industry is the remoteness of the centers of demand; for instance, San Francisco would be the nearest market, and this is supplied from more adjacent sources.

Oranges are of medium quality. Bananas excellent and of various species, from the small apple-flavored, especially suitable for the table, to the large plantain, exclusively devoted to cooking purposes.

Pineapples range from the sharply acid, used here in cider making, to the sweeter and more luscious sorts.

Cocoanuts are more abundant in the western part of the Republic, where an American corporation is erecting buildings with the purpose of placing machinery to manufacture cocoa-nut oil. (April 27, 1886.)

TURK'S ISLAND.

Consul N. K. Sawyer, Turk's Island, reports:

None of the fruits named in the circular are grown in sufficient quantities in this consular district to be of any commercial importance, and none are exported. (May 25, 1886.)

FOREIGN GREEN FRUIT.

REVIEW OF THE TRADE FOR THE YEAR 1885.—VARIETIES IMPORTED, AND THE AMOUNT OF EACH VARIETY, TOGETHER WITH THE VALUE AND DUTY THEREON.

The present paper, being the seventeenth of a series of similar annual papers, gives the amount of Mediterranean fruit imported into New York during the year 1885. This amount, as herein stated, may be taken as correct, but in the matter of an enumeration of the quantities received severally from the different ports named, it was found to be difficult to secure accurate results in many instances.

Anticipating the detailed statements of quantities, it may be stated that the past year shows, in comparison with the year 1884, a large decrease in importation of oranges from the Mediterranean and a still larger decrease in the importation of lemons.

In the case of green fruit imported from other countries on this continent, we still find an increase of oranges, a decrease of bananas, and an increase of pineapples, with a very decided increase of trade in canned pineapples.

It has not been the custom to enter into any extended consideration of the state of the trade in green fruit, except that they have arrived at giving accurate statistical information. The most obvious characteristic of the trade is the hazard growing out of the perishable character of the products handled, and this hazard is one that cannot in the nature of things be avoided, although the shorter ocean passage gained by the use of steamers has reduced it to some extent. Still the hazard remains, and the enumeration of the percentages of loss must always continue to be one of the important features of a paper of this kind.

MEDITERRANEAN FRUIT.

The importation of Mediterranean fruit at the port of New York during the year 1885, comprised 827,771 boxes and cases of oranges and 973,189 boxes lemons. On comparison of the above with the imports of 1884 the result shows a decrease of 115,040 boxes and cases of oranges, and a decrease of 48,477,600 oranges; also a decrease of 343,674 boxes lemons, and of lemons 103,102,200.

The total number of oranges imported was 176,509,200, of which 26,476,380 perished on the voyage, an average loss of 15 per cent. The total number of lemons imported was 291,956,700, of which 7,298,918 perished on the voyage, an average loss of 2½ per cent.

GRAPES.

The importation of grapes comprised 99,492 packages, on which there was an average loss of 25 per cent. On comparison with the imports of 1884 there was an increase of 41,992 packages.

The writer again desires to acknowledge his obligations to Mr. Frederick S. Robinson, an importer of this city, for valuable information received from him in relation to the quantity of Mediterranean fruit imported into New York during the last year;

also to Mr. William E. Wall, of the auditor's department, as to the value of green fruit entered for consumption at this port, and the amount of duty thereon, for the past year.

ORANGES FROM THE WEST INDIES, CENTRAL AND SOUTH AMERICA.

The importation of oranges from the countries and places above-mentioned was as follows, viz: The total numbers of barrels was 101,265, and there were also imported 8,122 boxes and crates, besides several cargoes and parts of cargoes of oranges in bulk. Following is an enumeration of particulars: From Kingston, Jamaica, 33,891 barrels and 150 crates, containing 11,200,330 oranges; from Havana, 23,861 barrels and 45 boxes, containing 7,952,913 oranges; from Port Maria, 22,317 barrels and 515 crates and boxes, containing 7,513,961 oranges; from Jamaica, 6,747 barrels and 1,529 crates and boxes, containing 2,269,491 oranges; from Mayaguez, 9 cargoes and parts of cargoes, containing 2,703,610 oranges; from St. Ann's Bay, 3,508 barrels and 16 crates, containing 1,169,100 oranges, including those imported in bulk; from St. Jago, 2,265 barrels and 180 crates, containing 783,045 oranges; from the Windward Islands, 3,846 barrels and 1,107 boxes, containing 1,446,300 oranges; from Montego Bay, 870 barrels and 2,784 boxes, containing 456,750 oranges; from Dominica, 595 barrels and 1,187 crates, containing 336,690 oranges; from Gerayanilly, 225 barrels and one cargo in bulk, containing 436,925 oranges; from Aspinwall, 422 barrels and 650 crates, containing 243,260 oranges; from Port Antonio, 512 barrels and 4 boxes, containing 169,600 oranges; from Nassau, 880 barrels, containing 283,400 oranges; from Baracoa, 677 barrels, containing, with those imported in bulk, 390,710 oranges; from San Domingo, 86 barrels containing, with the importations in bulk, 55,480 oranges; from Milk River, 563 barrels, containing 187,479 oranges; and from San Blas, 12,000 oranges in bulk, making a grand total of 37,899,844 oranges, of which 11,369,953 perished on the voyage, an average loss of 30 per cent.

On comparison of the above with the imports of 1884, the result shows an increase of 6,796 barrels of oranges, and 1,290,640 oranges. * * *

BANANAS FROM THE WEST INDIES, CENTRAL AND SOUTH AMERICA.

The importation of bananas from the places above named, comprising 1,919,526 bunches, exclusive of bananas imported from Aspinwall, were as follows, viz: From Baracoa, 829,535 bunches, by 78 steamers and 29 sailing vessels, an increase of 221,829 bunches Baracoa bananas over the imports of 1884; also an increase of 28 steamers, and a decrease of 59 sailing vessels. Of the above, 165,917 bunches perished on the voyage, an average loss of 20 per cent. From Port Limon there were imported 294,945 bunches yellow bananas; from Port Maria, 252,781 bunches; from Port Antonio, 194,927 bunches; from Jamaica, 103,174 bunches; from Kingston, 56,008 bunches; from St. Ann's Bay, 51,282 bunches; from Montego Bay, 47,482 bunches; from Belize, Honduras, 33,095 bunches; from Carthagena, 14,442 bunches; from Porto Rico, 12,626 bunches; from Costa Rica, 10,319 bunches; from Boco del Toro, 8,400 bunches; and from Gibara, 469 bunches, making a grand total of 1,919,526 bunches, including Baracoa bananas. Of the above number of bunches yellow bananas (1,089,941), 163,691 perished on the voyage, an average loss of 15 per cent.

On a comparison of the importation of yellow bananas with the importations of 1884, the result shows a decrease of 734,550 bunches. * * *

ASPINWALL BANANAS.

The importation of bananas from Aspinwall the past year consisted of 36 cargoes by steamers, comprising 177,967 bunches by "The Frank Brothers Company." Of the above number 21,134 bunches perished on the voyage, an average loss of 11½ per cent.

On comparison of the above with the imports of 1884, the results show a decrease of 3 steamers and 95,527 bunches of bananas.

NUMBER OF BARRELS OF PINES AND NUMBER OF PINEAPPLES IMPORTED IN 1885.

The importation of pineapples, mostly from the West Indies, the past year, consisted of 64,407 barrels, 2,032 crates and boxes, and 31 cargoes in bulk. Of the above, 37,730 barrels, 1,919 crates and boxes were from Havana, by 52 steamers, and comprised 1,691,100 pineapples; from Naasan, 2,175 barrels, 66 boxes, and 6 cargoes in bulk, comprising 610,184 pines; from Abaco, 8 cargoes, comprising 527,940 pines; from Governor's Harbor, 7 cargoes, containing 520,200 pines; from Cat Island, 5 cargoes comprising 264,000 pines; from Elenthera, 3 cargoes, comprising 201,600 pines; from Green Turtle Cay, 2 cargoes, comprising 180,000 pines; from Savana Sound, 2 cargoes, comprising 136,800 pines; from St. Jago, 1,826 barrels and 17 crates, comprising 74,740 pines; from Port Maria, 1,144 barrels and 8 crates, comprising 61,760 pines; from Montego Bay, 712 barrels and 14 boxes, comprising 29,830 pines; from Mayaguez, 1 cargo in bulk, comprising 14,748 pines; from Jamaica, 181 barrels, comprising 9,640 pines; from Kingston, 100 barrels and 4,620 pines in bulk, comprising 8,140 pines;

from Baracoa, Costa Rica, Port Antonio, Port Lucia, St. Ann's Bay, Antigua, Samana, Trinidad, and Dominica, 549 barrels and 8 crates pinea, comprising in the aggregate 26,540 pinea, making a grand total of 4,368,332 pineapples, of which 1,091,583 perished on the voyage, an average loss of 25 per cent.

On comparison of the above with the imports of 1884, the result shows an increase of 30,024 barrels, and of pineapples, 1,065,636.

During the past year there were imported into New York 27,792 cases of canned pine-apples, containing 611,232 cans, which were packed by Mr. Joseph S. Johnson, of this city, at his canning establishment in Nassau.

The increase of importations the past year was 6,297 cases and 95,352 cans.

There were 4 cargoes of pine-apples received at this port from Key West, aggregating 240,000 pinea.

COCOA-NUTS.

Cocoa-nuts were imported from the following-named places during the year 1885, in quantities as follows: From Baracoa, 6,131,950 by 65 steamers and 39 sailing vessels; from San Blas, 8 cargoes, comprising 1,659,854; from San Andreas, 5 cargoes, comprising 925,393; from Mayaguez, 769,560; from Porto Bello, 782,000; from Ruatan, 674,981; from Kingston, 411,808; from Port Antonio, 299,900; from Truxillo, 180,000; from Corn Island, 165,700; from Mosquito Coast, 173,278; from Boco del Toro, 150,603; from Montant, 106,320; from St. Jago, 144,300; from Jamaica, 149,300; from Colon, Carimana, Campeachy, Santiago, San Domingo City, Aspinwall, Hayti, Samana Bay, Trinidad, Belize, Hon., Nassau, Port Limon, St. Ann's Bay, Montego Bay, Port Maria, Savanilla, St. John's, P. R., and Greytown, aggregating 801,820 cocoa-nuts, making a grand total of 13,580,939 cocoa-nuts (showing a decrease of 3,630,949 cocoa-nuts in the imports of the past year), of which 1,080,475 perished on the voyage, an average loss of 8 per cent.

MISCELLANEOUS.

The importation of limes consisted of 561 barrels and 218 boxes and crates, on which there was a loss of 10 per cent.; 21 barrels grape fruit, comprising 3,000, loss 10 per cent.; 117 boxes mangoes, comprising 9,475, loss 35 per cent.; 3,040 shaddocks, loss 10 per cent.; plantains, 23,500, loss 20 per cent.; from Vera Cruz, 99 boxes lemons, comprising 24,750, loss unknown; 3 barrels and 211 boxes tangerines, loss unknown; from Halifax, 11 barrels apples, loss unknown. Star-apples, custard apples, prickly pears, guavas, sapodillas, pomegranates, avocado pears, papaws, watermelons, bread-fruit, and sugar-canes were imported in various quantities.

The aggregate value of every variety of fruit specified (with few exceptions) under the head of "Miscellaneous," will be found in the column of "Value" in the following table designated as "Green fruit."

The value of green fruit entered for consumption at the port of New York for 1885 is exhibited in the following table:

	Quantities.	Value.	Rates of duty.	Duty.
Bananas		\$1,056,412	Free .....	.....
Pine-apples		242,549	do .....	.....
Plantains		641	do .....	.....
Cocoa-nuts		331,677	do .....	.....
Green fruit		27,216	do .....	.....
Grapes		269,089	20 per cent.	\$53,817 80
Limes		1,962	do	392 40
Lemons	boxes 935,570	1,371,323	30 per cent., box ..	280,671 00
Do	do 2,039	3,339	16 per cent., box ..	528 24
Do	number 7,552,000	34,042	20 per cent., box ..	6,808 40
Oranges	boxes 767,393	965,561	25 per cent., box ..	191,648 25
Do	do 78,505	58,388	18 cents, box	10,205 65
Do	do 98,512	205,759	55 cents, barrel ..	54,181 60
Do	number 19,710,000	109,081	20 per cent.	21,816 20
Do	do 2,779,000	9,678	\$1.60 M	4,446 40
		4,686,717		624,513 94

A comparison of the above with the amount of the value and duty of 1884 shows a decrease of value of \$381,134, and a decrease of \$66,368.47 in the amount of duty.

The countries and islands from whence the foregoing varieties of fruit were imported are Mexico, Central and South America, British, French, and Danish West Indies, Cuba, San Domingo, Hayti, United States of Colombia, Venezuela, British Guiana, Brazil, Spain, Portugal, Italy, Sicily, and Nova Scotia.

J. H. BOSTWICK,

Inspector of Customs.

NEW YORK, May, 1886.

NEW SOUTH WALES TIMBER TRADE.

REPORT OF CONSUL GRIFFIN.

The growth of the timber trade of New South Wales, and indeed of all the Australasian colonies, has been extraordinary within the last few years. The total quantity of dressed and undressed timber imported into New South Wales during the year 1885 was 65,822,037 superficial feet, valued at \$2,296,760, against 49,608,825 feet, valued at \$1,903,900, for 1884, showing an increase of 16,213,212 feet for 1885. The imports from the United States increased from 13,782,746 feet to 23,165,235 feet. The rough or undressed American timber increased from 10,653,850 feet to 19,728,436 feet, and the dressed timber from 3,121,896 to 3,436,799 feet. The subjoined table shows the quantity and value of rough and dressed timber imported into the colony of New South Wales for each year from 1878 to 1885, inclusive.

Quantity and value of dressed and undressed timber imported into the colony of New South Wales for each year from 1878 to 1885, inclusive.

Year.	Dressed timber.		Undressed timber.	
	Quantity.	Value.	Quantity.	Value.
	<i>Feet.</i>		<i>Feet.</i>	
1878.....	4,871,273	\$327,390	12,747,926	\$530,745
1879.....	5,981,923	308,475	20,933,969	730,245
1880.....	5,565,066	308,120	14,529,056	531,505
1881.....	6,877,336	355,205	17,140,040	696,000
1882.....	14,739,853	919,810	30,392,919	1,155,965
1883.....	16,456,700	881,895	31,674,757	1,068,620
1884.....	16,444,111	797,890	33,167,714	1,106,610
1885.....	19,464,845	882,065	46,180,779	1,408,696

The following table shows the quantity and value of dressed and undressed timber imported into the colony of New South Wales during the year 1885, together with the names of the countries whence imported :

Quantity and value of dressed and undressed timber imported into the colony of New South Wales during the year 1885, together with the names of the countries imported from.

Country.	Dressed.		Undressed.	
	Feet.	Value.	Feet.	Value.
Great Britain.....	3,522,771	\$158,840	1,732,186	\$61,580
Victoria.....	689,058	49,210	1,613,681	61,830
South Australia.....	313,404	25,245	473,484	38,810
Queensland.....	3,437	170	819,636	31,355
Western Australia.....			900	50
Tasmania.....			325,731	10,740
New Zealand.....	5,304,866	218,245	10,537,974	267,890
Fiji.....			27,839	1,860
Point-de-Galle.....			4,000	500
Hong-Kong.....			525	95
British Columbia.....	767,319	30,163	9,485,774	272,675
United States.....	3,482,799	178,325	19,728,436	581,140
Norway.....	5,423,341	218,600	785,595	27,975
Sweden.....			477,314	22,850
New Guinea.....			86,907	5,750
France.....	3,550	2,250		
Germany.....	300	15	80,777	3,615
Totals.....	19,464,845	881,065	46,180,779	1,408,706

AMERICAN TIMBER.

It will be seen that the United States takes the lead of all other countries in the export of timber to this colony, and that New Zealand comes next, and that British Columbia is the third on the list. Norway, however, furnishes the largest share of dressed timber, a fact probably occasioned by the low price of labor in that country. The imports from America consist principally of pine and red-wood from the various States and Territories on the Pacific Slope. The saw-mills of California, Oregon, and Washington Territory rank amongst the foremost in the world, and are equipped with the best and latest improvements in milling machinery, &c. The sawn timber of the Pacific slope is often 150 feet in length, and for general building purposes there is perhaps no other on the globe that will begin to compare with it. New markets are being opened up for it every day, and active preparations have been made for its shipment in larger quantities than ever, not only to Australasia, but Japan and other countries.

AMERICAN TIMBER-MILLS.

The following are some of the leading timber-mill companies engaged in exporting lumber to the Australasian colonies from the Pacific coast of the United States: The Puget Mill Company; the Washington Mill Company; the Port Blakely Mill Company; the Port Discovery Mill Company, &c.

The popularity of American lumber in the Australian colonies has excited much opposition on the part of those interested in the sale of Australian timber, and strong efforts are being made to have the Government increase the tax upon the timber imports. The present duty is 2 shillings (48 cents) per 100 superficial feet on dressed timber, and 1 shilling (24 cents) per 100 feet on rough or undressed timber.

It has been urged that the duty on the former should be increased to 5 shillings (\$1.21) and on the latter to 3 shillings (72 cents) per 100 feet. It is thought that the increase of duties will bring about a more general use of home-grown timbers, such as the Australian hardwoods. It is said that the Australian hardwoods do not take fire readily, and amongst the reasons assigned for the destruction of the Garden Palace at Sydney some years ago is that it was built of Oregon pine instead of Australian wood. The reason, however, assigned for such a tax is a very unsatisfactory one, and could be applied with equal force to all kinds of material easily set on fire.

AUSTRALIAN TIMBER.

The light, soft, straight-grained woods suitable for building purposes are becoming very scarce in Australia, except in places difficult of access. The colonial pine is by far the most suitable of the Australian soft woods. It is close-grained, free from knots, and easily worked. It is very generally used for flooring and spars, joiners' and cabinet work, &c. It is shipped to Sydney from the northern and southern districts by steamers. The logs measure from 100 to 120 feet in length. Their diameter is from 2 to 3 feet. The greater part of colonial pine is obtained from alienated lands, bordering the rivers in the northern districts. It is abundant on the Crown lands, some distance from navigable water, and has to be drawn by bullock teams, over rough country. Boards of this timber sell in Sydney from 12 shillings (\$2.88) to 16 shil-

lings (\$3.84) per 100 superficial feet. Logs from 7 shillings (\$1.68) to 9 shillings (\$2.16) per 100 superficial feet, girth measurement.

White beech.—I learn from a report furnished by the inspector of the forests at New South Wales that this timber is one of the most valuable in Australia. It is of a beautiful silvery color, close-grained, and not liable to shrink or warp. It is much used for decks of ships, floorings of verandas, carving, wood-engraving, &c. It is found on both the northern and southern coast. It is conveyed to Sydney in small steamboats. The logs are from 100 to 120 feet in length, and vary in diameter from 3 to 4 feet. The price of this timber in Sydney is from 14 shillings (\$3.40) to 18 shillings (\$4.38) per 100 superficial feet.

Red cedar.—This timber, which at one time was so exclusively used in Australia, is becoming very scarce through neglect and waste. The trees which were cut down about twenty years ago were allowed to rot on the ground. The timber is of a dark red color, light in weight, and very durable. It is used for furniture, turning, cabinet-making, and all kinds of fittings in house and ship building. It is said to be plentiful in Queensland and New Guinea. It is seldom found in New South Wales except in ravines and very mountainous country. It is, however, being extensively planted by the Government. The Sydney prices of red cedar vary from 18 shillings (\$4.22) to 35 shillings (\$8.36) per 100 superficial feet, according to quality. Logs bring from 16 shillings (\$3.89) to 25 shillings (\$6.07) per 100 superficial feet, girth measurement.

Native plum (Damson) is another valuable timber, similar to white pine, and used for the same purposes. It is found in moderate quantities. The logs measure from 80 to 100 feet, with a diameter from 2 to 3 feet.

White cypress pine is found in considerable quantities in the interior. It is strong and durable, and is used for planks, weather-boards, rafters, telegraph-poles, &c.

Blue Mountain pine is produced by the *Frenela Muelleri*, a small tree found on the Blue Mountains. The timber is soft, and easily worked, but deficient in strength and durability.

Richmond white pine is a very valuable timber tree. It is used for general building purposes. The root stock furnishes excellent veneers for cabinet-making, but unfortunately the tree is not plentifully distributed.

HARD WOODS.

A great part of the forests of Australia consist of a class of trees belonging to the natural order of myrtacæ, or species of eucalyptus. About 27 different varieties have been described. They attain gigantic size, and are unquestionably the tallest trees in the world. One of them in the Black Range of Berwick measures 500 feet from the ground to the topmost branch, being fully 20 feet higher than the Pyramid of Cheops. A fallen tree near Healesville, Victoria, measured 480 feet. Trees of the species known to science as *eucalyptus amygdalina* (the peppermint), are not unfrequently met with in the mountain ravines, varying in height from 300 to 480 feet. The leaves of the eucalyptus are entire leathery. They grow perpendicularly, so that both sides are exposed to the light.

These giants of Australia are not so impressive as the big trees of California, on account of the greater bulk of the latter.

The timber of various kinds of eucalyptus is extensively used in Australia for building purposes and cabinet work. It is, however, very difficult to work, on account of its extreme hardness, and the wood is

often injured with stains of gum. But while many varieties are valuable for certain purposes, it is altogether out of the question ever to expect them to take the place of the softer and more easily wrought woods imported from America.

At a meeting of the saw mill proprietors, recently held in this city, the chairman, Mr. Richard Kemp, stated that the controversy going on in the press as to the comparative merits of Oregon pine and Australian hard woods had brought a very important subject before the people, and that he thought the weight of the argument was in favor of the hard woods. He said, moreover, that the duties on imported timber should be increased in order to protect the home industry. He had received a large number of telegrams from saw-mill proprietors in various parts of the colony expressing sympathy with the movement to secure an increase of duties, and a leading architect had informed him that the Australian hard woods, if properly seasoned, could be used with better advantage in the construction of certain buildings than any other kinds of timber. It was pointed out at the meeting that the expense of getting colonial timber to the Sydney market was twice as much as it cost to bring lumber all the way from America, and it was said that the reason for this is that the Americans ship their lumber in large vessels, whilst the Australians use very small steamboats which are run at a very heavy cost. Before the meeting adjourned a resolution was passed authorizing the chairman to appoint a deputation to wait upon the ministry and urge upon them the necessity of increasing the duties on imported timbers.

In spite of everything said in favor of the use of the hard woods of Australia, it is well known that they are seldom sound at heart, and when sound the wood has often to be rejected, on account of its extreme brittleness.

One of the most valuable of the hardwoods is the *Tarrietia*. It is used for posts, sleepers, piles, bridges, &c. The length of its logs is from 80 to 100 feet. The diameter is from 2 to 3 feet.

Another tree called *Blackwood* is very hard, dark colored, and prettily marked. Its sap-wood is white or yellow and easily wrought, and is strong and durable. It is used for furniture, fencing, bridges, staves, carriages, pianos, cooper and cabinet work. It is said to be almost imperishable in water. It is plentiful on the Blue Mountains and on the more southern coast of the colony.

White box is another favorite tree. It is used for ship-building, wharves, bridges, &c. Ribs of vessels built of this timber have kept perfectly sound for over 30 years. The tree attains a height of 150 feet. It has a smooth brown deciduous bark, and a dense foliage. It is found in open and brush forests from the Hastings to the Tweed River. The timber is brought to Sydney by railway.

Red gum.—This makes a beautifully grained timber not unlike the English oak. It takes a fine polish and is valuable for house carpentry.

Peppermint.—This tree is abundant in many parts of the colony. An excellent oil is made from the leaves and exported to Europe in large quantities. The tree is found in both the northern and southern districts.

Blue gum.—This timber is heavy, strong, and durable. It is said to be equal to English oak in transverse strength. It is used for ships, house-building, sleepers, shafts, spokes of wheels, &c. The tree grows rapidly, and has been extensively planted in California, Italy, Algiers, Egypt, and other countries. It is said that fever cannot exist in the neighborhood where it is grown. Oil and other extracts are made from

its leaves for export. It grows principally on the southern coast. An interesting feature connected with this trees is that it produces two different kinds of leaves. Professor Brizio, an Italian botanist, accounts for this peculiarity on the ground that the original trees grew in totally different climatic situations, and that their leaves were broad and horizontal. Their present vertical position as well as the various forms of the leaves, especially in the upper parts of older trees, is, he thinks, an attempt to adapt themselves to new conditions by diminishing the leaf surface exposed to the direct action of solar heat.

Mountain ash.—This tree is very common in New South Wales. The timber is believed to be quite equal to that of the American ash. It is used for palings, shafts, fencing, &c. Height from 150 to 180 feet; diameter from 3 to 5 feet.

Slatey gum.—Timber very hard, durable, and difficult to split. It is considered almost equal in strength and durability to iron bark, and will not crack when exposed to the sun. It is used for fencing, plow beams, shafts for drays, carts, &c. Height from 80 to 100 feet, diameter, 2 to 3 feet.

Stringy bark.—Timber strong, tough, hard, and durable; largely used for house carpentry, joists, rafters, fuel, &c. The bark is used for roofing country houses. The tree is plentiful in the counties of Camden and Cumberland, and on the Blue Mountains. Height 150 to 200 feet, diameter 3 to 4 feet.

Blood-wood.—Timber strong and durable, subject to gum veins. It is used for posts, piles, rails, fuel, &c. Height 80 to 100 feet. It is plentifully distributed in various parts of the colony.

Gray iron bark.—Timber hard, tough, heavy, inlocked, and durable. It is highly esteemed by coach builders and wheelwrights. Height from 100 to 150 feet, diameter 2 to 4 feet.

Red iron bark.—Timber dark colored, remarkably hard, heavy, strong, and durable, largely used for girders, beams, poles, bridges, fences, &c.

She iron bark.—Timber much valued, hard, tough, inlocked, and durable; used for bridges, sleepers, railway carriages, beams, piles, spokes, &c. It grows in the northern and southern districts. Height from 100 to 150 feet. The timber is shipped to Sydney by steamers.

Large-leaved iron bark.—Timber dark colored, hard, heavy, and durable; used for large beams in buildings, stores, and bridges. It is plentifully distributed.

Swamp mahogany.—Timber strong, hard, and durable, used for shingles, ships, and house-building, rough furniture, &c. Height 80 to 100 feet, diameter 4 to 6 feet.

Clarence River flooded gum.—Timber light, strong, and durable, extensively used for building purposes, posts, rails, scantling, flooring, ships' planks, naves and felloes of wheels, &c. It is found in open forests, near banks of rivers and creeks, on rich soil, in both northern and southern districts. This timber is considered one of the best indigenous hard woods. Height from 80 to 100 feet.

Box-wood.—This timber is exceedingly hard, tough, and durable, but subject to be attacked by white ants and dry rot. It is used for scantling, fencing, and house-building and also for fuel. It burns brilliantly and generates great heat; frequents the southern coast district. Height from 80 to 100 feet, diameter 3 to 4 feet.

Woollybutt.—Timber hard, tough and durable, used for felloes, shafts, spokes, house building, fencing, &c. The leaves of this tree yield a valuable volatile oil and the bark contains over 8 per cent. of

tannic acid. It grows on rich alluvial flats in southern coast districts. Height, 100 to 150 feet; diameter, 3 to 4 feet.

Spotted gum.—Timber strong, elastic, and durable. Used for ship-building, bridges, shafts, cubes for street paving, &c. It grows in both northern and southern districts. Height, 100 to 150 feet; diameter, 3 to 4 feet.

Tallow wood.—Timber strong, handsome, and durable. It is of a greasy nature, as the name implies, and grows on the northern coast. Height, 100 to 150 feet; diameter, 4 to 6 feet.

Messmate, stringybark.—Timber strong and durable. Used for bridge planking, fencing, &c. Height, 150 to 200 feet; diameter, from 4 to 6 feet; moderately plentiful.

White mahogany.—Timber similar to the preceding but heavier. When planed it has a soft surface and is prettily veined. It is used for building purposes. Height, 80 to 100 feet; diameter, 3 to 4 feet.

Grey gum.—Timber strong, tough, and durable. Used for building purposes; moderately plentiful. Height, 100 to 150 feet; diameter, 3 to 4 feet.

Red mahogany.—Timber remarkably strong, hard, heavy, and durable. Used for buildings, fencing, beams, rafters, ships' knees, shingles, &c. A church built of this timber 54 years ago was recently pulled down and the rafters were found to be perfectly sound. It frequents both northern and southern districts. Height, 100 to 120 feet; diameter, 3 to 4 feet.

Red gum.—Timber strong, hard, heavy, close grained and durable, impervious to the white ant and cobra; used for ship-building, piles, flooring, railway sleepers, bridges, wharves, &c. It is one of the most valuable and best known of Australian hardwoods; plentifully distributed; favors river banks and rich flats subject to floods. Height, 100 to 150 feet; diameter, 3 to 5 feet.

Hickory leatherjacket.—Timber exceedingly strong, tough, and durable. Used for railway sleepers, posts, rails, fuel, &c. Fence-posts of this timber have kept perfectly sound in the ground for 50 years. It grows in open forest country but is not abundant. A number of other valuable timber trees could be included in the list but are omitted for the reason that they are not accessible to the market.

About one-fourth of the area of this colony, east of the dividing range and the main south coast range, is timbered with trees of fair quality, principally hardwood, but very difficult to reach as they are located in very rough country. On the timber reserves, scattered over this area, the natural trees are estimated to number from 6 to 120 per acre.

One great obstacle to the use of Australian timber is that very few trees of the same kind are found growing together. I have never seen in any part of Australia forests of one kind of trees, as in America. New Zealand has extensive forests of kauri pine, but that colony does not form a part of the great island continent. I append hereto a list of some of the best known timbers of this colony, showing their transverse strength, &c.

Table showing the proof transverse strength, modulus of rupture, and weight per cubic foot of New South Wales timber, computed from the results of experiments by Col. E. W. Ward and others.*

Name.	Proof strength.	Modulus of rupture.	Weight of a cubic foot.
			Lbs.
Red-flowering Ironbark (<i>Eucalyptus leucoxylon</i>).....	401	9, 144	73
White Ironbark (<i>Eucalyptus crebra</i>).....	364	8, 568	69
Box (<i>Eucalyptus hemiphloia</i>).....	350	8, 064	73
Green Wattle (<i>Acacia deurrona</i>).....	817	6, 906	45
Red Ironbark (<i>Eucalyptus siderophloia</i>).....	313	6, 858	72
Grey Gum (<i>Eucalyptus saligna</i>).....	308	7, 560	62
Forest Oak (<i>Casuarina torulosa</i>).....	301	6, 930	69
Bloodwood (<i>Eucalyptus eximia</i>).....	294	6, 930	53
Grey Gum (<i>Eucalyptus tereticornia</i>).....	285	6, 300	71
Flooded Gum (<i>Eucalyptus rostrata</i>).....	276	6, 174	59
Oak (<i>Casuarina stricta</i>).....	273	6, 048	53
Turpentine Tree (<i>Syncarpia laurifolia</i>).....	266	5, 976	56
Stringybark (<i>Eucalyptus capiteolata</i>).....	266	5, 958	55
Bastard Box (<i>Eucalyptus bicolor</i>).....	262	5, 724	69
Yellow Box (<i>Eucalyptus melliodora</i>).....	259	5, 796	66
Flindosa (<i>Flindersia australis</i>).....	255	5, 022	58
Pencil Cedar (<i>Dysoxylon Muelleri</i>).....	245	5, 724	49
Blackbutt (<i>Eucalyptus pilularis</i>).....	245	5, 544	56
White Gum (<i>Eucalyptus albens</i>).....	238	5, 040	62
Red Mahogany (<i>Eucalyptus resinifera</i>).....	238	6, 300	70
Mountain Ash (<i>Eucalyptus virgata</i>).....	231	5, 418	60
Woollybutt (<i>Eucalyptus longifolia</i>).....	231	5, 292	67
Marblewood (<i>Olea paniculata</i>).....	231	5, 220	69
Mossmate (<i>Eucalyptus amygdalina</i>).....	224	4, 842	68
Light Yellow wood (<i>Flindersia Oxleyana</i>).....	217	5, 346	50
Tea-tree (<i>Melaleuca styphelioides</i>).....	217	4, 842	66
Apple-tree (<i>Angophora subvelutina</i>).....	215	4, 446	56
White Box (<i>Tristania conferta</i>).....	210	4, 788	61
Spotted Gum (<i>Eucalyptus hamastoma</i>).....	196	5, 418	67
Swamp Oak (<i>Casuarina suberosa</i>).....	196	4, 662	52
White Gum (<i>Eucalyptus stellulata</i>).....	196	4, 536	54
Moreton Bay Pine (<i>Araucaria Cunninghamii</i>).....	196	4, 212	48
Native Myrtle (<i>Backhousia myrtifolia</i>).....	192	4, 338	52
Brush Cherry (<i>Eugenia myrtifolia</i>).....	191	4, 788	46
Peppermint (<i>Eucalyptus piperita</i>).....	187	3, 780	56
Hickory (<i>Myrtus acmenoides</i>).....	182	4, 914	42
White Cypress Pine (<i>Frenela robusta</i> , v. <i>verrucosa</i>).....	182	3, 870	40
Colonial Deal (<i>Podocarpus elata</i>).....	178	3, 960	36
Richmond Pine (<i>Frenela robusta</i> , v. <i>microcarpa</i>).....	174	3, 870	39
Sassafras (<i>Doryphora sassafras</i>).....	171	3, 834	35
Dark Yellowwood (<i>Rhus rhodanthema</i>).....	168	3, 654	49
Coachwood (<i>Ceratopetalum apetalum</i>).....	168	3, 744	38
Tea-tree (<i>Callistemon salignus</i>).....	168	3, 528	44
Red Cedar (<i>Cedrela Toona</i>).....	140	3, 296	28
Silky Oak (<i>Grevillea robusta</i>).....	.....	3, 276	35
Beech (<i>Gmelina Leichhardtii</i>).....	140	2, 898	38
White Cedar (<i>Melia composita</i>).....	.....	2, 700	32

* The timber in every case is supposed to be dry. Green timber is much weaker, having sometimes only half the strength of dry timber, especially against crushing.

The proof transverse strength is the weight in pounds avoirdupois which a bar of the timber one inch square, supported at two points one foot apart and loaded in the middle, is capable of sustaining without having its fiber and elasticity destroyed or impaired in any way. The modulus of rupture is eighteen times the load required to break the bar.

NEW ZEALAND TIMBER.

The great bulk of the timber imported into New South Wales from New Zealand consists of kauri pine, a product peculiar to the North Island of that colony and not found anywhere else in the world. It is straight grained, soft, and easily wrought. The principal objection to its use is that it is apt to shrink, endways, but this obstacle is more or less avoided by the exercise of care in seasoning. It is, however, a grand timber, and is so generally used in Australasia that New Zealand has developed the largest timber industry in the southern hemisphere.

Some of the saw-mills there employ as many as 500 hands, and the Auckland Timber Company, in their town and country mills, give employment to about 1,300 hands. The total annual output of timber of the whole of the colony is estimated at about 200,000,000 superficial feet. The number of saw-mills in operation at the end of 1885 was 209. According to the last official report on New Zealand forests, there are in Southland still 312,467 acres of virgin forest out of 347,797 reserved by the Crown. There are 36 saw-mills in operation, employing about 700 men, the average weekly expenditure for wages being \$6,000 or about \$325,000 per annum, the total output of the district being about 24,000,000 superficial feet of inch thickness per annum. Over 300 acres of forest are denuded yearly. In the district of Otago, with an area of 13,759,000 acres, there are only 100,000 acres of forest land. There are 11 saw-mills in operation, and the annual output is 7,600,000 superficial feet. In Canterbury out of an area of 8,693,000 acres only 374,350 acres are under forest; 21 saw-mills are in operation, the total output being 10,000,000 feet.

Westland province, out of 3,045,000 acres, has 1,897,558 acres covered with splendid forest, in addition to 632,519 acres of scrub timber. The present output scarcely exceeds 3,000,000 feet, as many of the mills are only on one-third time. In the Nelson province, out of 7,000,000 acres, an estimated area of 3,290,000 acres of forest land are still in the hands of the Crown. Twenty-two saw-mills are at work, and the output is equal to 5,260,000 superficial feet. A fifth of the area of Marlborough (2,560,000 acres) is forest land. There are fourteen saw-mills, and the output is estimated at 8,606,340 superficial feet per annum.

The district of Auckland, however, takes the lead of all the others in the production of timber. Out of 17,000,000 acres in this district 7,200,000 acres are covered with forests of which the Crown still holds 1,606,350 acres. The number of saw-mills are estimated at 43, the annual output being 48,631,206 superficial feet. The value of the timber exported from Auckland during the year 1885 was \$699,760.

G. W. GRIFFIN,
Consul.

UNITED STATES CONSULATE,
Sydney, N. S. W., April 14, 1886.

GINSENG CULTIVATION IN COREA.

REPORT OF MR. FOULK.

The ginseng of Corea as ordinarily spoken of is cultivated. It is of two kinds, named by color—red ginseng (Heng-lum) and white ginseng (Pak-lum)—both kinds being the same root. White ginseng is the plain root, washed and dried. It is superior to the red ginseng to Coreans, who say that the process of curing preserves, but reduces the strength of, red ginseng.

White ginseng is abundantly sold in Corea, and enormously used as a strengthening and blood-purifying medicine.

Red ginseng is cured white ginseng.

By law it can only be cured by the Government, at one place. The curing is a process of steaming and prolonged dyeing, which solidifies the white root, and changes its color to a fleshy pink. When broken, red ginseng presents a glossy brittle section.

Red ginseng is not an article of ordinary trade, and may not be exported under the treaties of Corea. The whole crop is carried to China by the annual embassy, and the proceeds of sales belong to the King personally.

From personal experience and observation I am assured that Corean ginseng is an active, strongly-heating medicine. It is most commonly taken in the form of a concentrated infusion. The fresh root is sliced and eaten with honey. The use of it must be attended with caution. It often produces boils and eruptions, sleeplessness and flushing of the body, and other temporary derangements of the system in the course of its purification.

Coreans say that but ten out of every hundred persons in their own country may use ginseng with the above-described effects, but say also, that in every case the use of ginseng is beneficial as purifying and strengthening.

The best ginseng is the wild root of, and above, thirty years' growth. Such commands a fabulous price and is not ordinarily obtainable or ever in the market.

Western people appear to regard the virtues of ginseng claimed by Orientals rather contemptuously—as imaginary and based on superstition. The evidences are that the mystic value attached itself to ginseng after its virtues had been practically ascertained.

Of the specimens sent herewith, those of white ginseng are very good. Those of the red ginseng have a yellowish color which ought not to be shown in the very best red ginseng. However, they show near the extremities of the roots the right color.

Information, as full as any yet known to Western foreigners, on the growth and curing of ginseng will be found in my report of a journey in Corea submitted to the Navy Department through the Department of State in October, 1884.* I have since then heard it remarked that in curing sometimes cold water is dashed upon the ginseng at the end of the steaming.

GEORGE C. FOULK.

LEGATION OF UNITED STATES,
Seoul, Corea, February 20, 1886.

MINERAL PRODUCTS OF COREA.

REPORT OF MR. FOULK.

The only practical effort to work mines in Corea that has been made as yet by Western foreigners was that of Messrs. Jardine, Matheson & Co., a wealthy commercial firm of China, in 1883-'84. This firm, after negotiations with Mr. P. G. von Mölendorff, who then served as general adviser to the Corean Government, sent a well-equipped party of foreigners and Chinese into the country from Seoul, in the winter of 1883, to make an examination with the view of securing mining concessions in case minerals were found in paying quantities. The party established a camp or two and remained in the country, its members making frequent individual visits to Seoul and Chemulpho, until about August of 1884.

Early in the spring of 1884 the firm established a head office at Chemulpho, moored a large hulk in the harbor there, and started a steamer

* Printed in Foreign Relations, 1885.

to ply between the port and Shanghai. From this it is to be inferred that the company expected great results.

The party at work in Corea began their examination near Seöul and continued it thence in a northerly direction until it came to the main chain of the coast mountains to the south of Wönsan (Gensan). It may be said the examination was entirely confined to a narrow belt of territory lying to the north of Seöul, between the northern tributaries of the Seöul River, and about one hundred miles long.

From first to last the work of examination was attended with great difficulties. The poor accommodations for living in the interior of Corea, the severity of the weather, the wretched roads, and wild mountainous character of the district; ignorance of the language and customs of the people, distrust of the natives, most of whom have never seen or heard of Western foreigners—such were natural enough obstructions. But in addition to these, it is quite evident that the company did not have the support and assistance of the Government in its work, and that Mr. von Mölendorff alone conducted the examination for Corea, without the Government's having much, if any, voice or interest favorable to the success of the examination. The geographical, social, and political conditions of Corea are such that without governmental encouragement and direct assistance success cannot attend any great venture in the country.

It is significant to note that the district examined by Messrs. Jardine, Matheson & Co. is one of the very few *not* generally described by Coreans as rich in minerals.

In March, 1884, it was made known that galena had been discovered by the party in Yöng Phyöng prefecture, but the silver was so small in amount that work would only pay by using extensive reducing machinery. But no traces of coal were discovered. Full reports of the work were not published, yet it is generally believed the results of the examination are known. The following notes are taken from an English Blue Book, containing translation of an article written by a Chinese who was with the party.

LOCATION OF DEPOSITS.

Gold is reported to be found at Hakwa-U and San-Kwa-U, two places about 3 miles apart, the first $1\frac{1}{2}$ miles from Yang-tök prefecture, and gold was obtained from these places in 1883.

Silver was found in Yöng Phyöng prefecture, about 40 miles from Seöul, in small quantities (in galena). Lead was plentiful. Absence of coal, remoteness from the coast and bad transportation, etc., preclude working these mines at present.

Copper mines which have been worked by Coreans were found at Ni-shil-tong, in Yang-tök valley, and also at a place about 8 miles eastward of Kinewha prefecture. Copper is mined also at Chöng-nö, near the boundary of Kum Soüg prefecture, and the yield is reported as fair.

At Sokok, some 20 miles beyond Kum Soüg, a copper mine in a deep gorge is reported.

Lead was being mined by Coreans in two mines, 800 and 500 feet deep, near Sokok, some 59 to 60 pounds only per day being produced; the yield is sold at Sokok.

Silver is found in the lead ore of Tang Hyöng. It is reported that there are iron and copper mines at Clihimbo, Yöng Phyöng, Kim-wha, and Kum Soüg, which will bear working for thirty or forty years and produce paying quantities. No traces of coal were found.

In June, 1884, Messrs. Jardine, Matheson & Co. sent an expert mining engineer to join the party in Corea. He made several visits of inspection along the line from Seöl to Wonsan, and visited some districts outside of the belt in which the party had been working.

His examinations were very superficial, and he returned to Seöl unable to show any very satisfactory results. During the summer of 1884 gold dust and nuggets were very plentiful in Seöl, and I am certain that this engineer endeavored to buy specimens of Corean gold in Seöl, that he might take them to the head office of his employers in lieu of those he had not been able to find himself.

At about this time the company sent to its camp in the neighborhood of Yangtök an American named James Graham, a seaman by profession, who had mined in California. This man kindly treated the natives and set his few coolies to work at pan-washing in some rice fields. He at once produced gold in considerable specimen quantities in dust and large rounded nuggets. He returned to Seöl very soon and made his report. Graham, who had once served with me on board the United States steamer Monocacy, exhibited his find to me—a packet of dust and nuggets worth about \$400. He described to me the locality in which he had been working as very rich in gold, and stated that pumps only would be needed to make the yield of washing in the Yangtök valleys very valuable.

While he was at work in the rice fields an officer came to complain that he was drawing water from the fields and otherwise injuring them. Upon this he stopped work at once.

Promptly upon the receipt of Graham's report Messrs. Jardine, Matheson & Co. began negotiations with Mr. Von Mölendorff to get a franchise of mining rights. He failed, however, to produce it, and the Government now began to show much interest, perhaps surprise, in Messrs. Jardine, Matheson & Co.'s venture. The firm endeavored to secure rights by other means, but failed in every instance. It finally abandoned its intentions to work mines in Corea, and removed its office, the cargo hulk, and mining party from Corea towards the close of 1884. In the following spring Graham endeavored to secure a position under the Corean Government to enable him to work gold washings for it.

MINING PRIVILEGES.

There is no doubt whatsoever that in China and Japan it is believed that Corea is rich in minerals, and more particularly gold. Yet it has been the rule heretofore for the natives of those countries to present the most disparaging reports of Corea. At the same time it will be observed that Japanese and Chinese are crowding into Corea with all dispatch, and forming colonies where permitted. Their trade is always increasing, and inasmuch as the exports of Corea are few and poor, while Chinese and Japanese imports are considerable, and that Corea has no coinage or currency acceptable abroad, it follows that there must be a constant and considerable flow of the crude precious metals of Corea into Japan and China.

In the autumn of 1885 the Chinese commissioner in Seöl and his assistant made application for mining rights in Corea to the King.

They proposed sending to the gold districts of the country gangs of 30 to 40 Cantonese Chinamen who had mined in the United States. Twenty per cent. of the net profits in gold was to be the share of the Corean Government.

The application failed abruptly, and was regarded as being very extraordinary in the terms. At about the same time certain Germans

made application for mining rights, but were asked to wait until "next year" for its consideration. It has been several times stated by the Corean Government that it is not prepared to consider propositions in regard to mining, but will do so when it shall have secured competent foreign advisers for its service. The disposition of the Government is to guard its mines jealously, and to be the actual proprietor of them in case they are to be developed after the western methods of working.

POSITION OF MINES.

All Coreans proclaim here that there is much gold and other mineral wealth in the country. From very ancient times gold and other mines have been worked in Corea and their localities are widely known. It is a great mistake to suppose that Coreans are ignorant of the localities of mineral products of their country. There is probably no country in the world where the mass of the people are better acquainted with the geography of their own land than Coreans.

The excellence and great number of maps to be found is very remarkable. There are, in even the smallest village, maps on large scales and showing minute details of their localities. The localities of all the principal products, natural or manufactured, are well known to even the children of ordinary intelligence.

Phyŏng-au Province is generally spoken of as richest in gold, the chief locality being Yŏng-wŏn, a remote inland town, where gold has been produced from very ancient times.

In Ham-Kyŏng Province (N. E.) at Yŏng-hung there are from twelve to twenty washings which are now the most productive in the country. This place Yŏng hung is but a few miles north of the treaty port of Wŏnsan (Gensan), whence the largest part of Corean exported gold is carried in Japanese steamers. The Japanese evince a very hearty interest in these mines.

The following nine places are noted from ancient times as gold mines:

Province.	Prefecture.	Province.	Prefecture.
Kyŏng-sung (southeast).	Kyung-chŭ.	Whanghai (west).....	Chang-yŏu.
.....	Sŏng-chŭ.	.....	Sŏng-wŏa.
.....	Wi-sŏng.	Phyŏng-au (northwest)...	Yŏng-wŏn.
Ham-Kyŏng (northeast)	Yŏng-hung.	Chŏula (southwest).....	Kumku.
		.....	Imashil.

During the fall of 1885 the Government sold permits to private individuals to work at these places for a period of five months, a small percentage of the gold to be presented to the Government. It would appear that the Government has never worked for itself continuously any gold mines. Referring to the mines at Yŏng-hung, which are often visited by Japanese, the director of the engineering association of Japan, Mr. Ito Yajiro, writes as follows:* "Yŏng-hung, in Ham-Kyŏng Do, has 12 gold mines (one of which, however, is closed, owing to its proximity to a royal tomb), and in these 5,600 laborers are (now) employed.

The exact amount of the output of these mines cannot be ascertained, owing to the defectiveness of official regulations. It is known for certain that the miners present to the Government, and to some of the public officials, gold obtained, at the rate of 60 per cent. for the former and 30 per cent. for the latter, amounting to 50,400 pounds a year, but

* Taken from a published collection of notes in a report.

any quantity obtained beyond that weight is sold secretly by the laborers." It has been stated to me that at present (March, 1886,) the Government receives about 30 *nyang** of gold per month from the Yöng-hung mines.

The winter has been very severe, and work could not be carried on at the eight other places, stated above to have been farmed out by the Government in the autumn of 1885.

† At Unsan, in Ph्योंg-au Province, there is said to be large deposits of gold dust some five or ten feet under the surface of the ground, but the quantity of metal to be obtained is too small to make work of the Coreans profitable.

Silver is found in Kyöng kui, Chhung-chhông, Chöula, and other divisions, but is not commonly worked. Whenever officials travel to Peking, a quantity of silver is dug from the mines, one-half of which is worked into bars and the remainder retained as treasury reserve, and 2,000 pounds are given to each ambassador to the Chinese capital.

OTHER MINERALS.

Copper mines, though found here and there in Kyöng kui and Kyöng-sung provinces, are only occasionally worked, when there is a demand for copper coins or when the ore is in demand for commerce. The annual output is estimated at five or six thousand pounds.

Two or three good veins were discovered in Ph्योंg-au province many years ago. Iron of a superior quality is obtained in all but the two northern provinces.

Coal is found in large quantities between Hamhung and Ou Söug in Ham Kyöng province, and one or two veins are exposed in Kyöng-sung province. Nothing is yet known as to the continuity of these veins, but the outcrop bears a slight resemblance to those of Chikuzen (Japan). The total amount of gold and silver exported from 1881 to 1884 from the treaty ports is as follows :

[One yen is about \$1 silver.]

Port.	Gold.		Silver.	
	Weight.	Value.	Weight.	Value.
	<i>Pounds.</i>	<i>Yen.</i>	<i>Pounds.</i>	<i>Yen.</i>
Pusan	979. 7273	245, 019. 203	2, 953. 7605	50, 914. 703
Wönsan	4, 468. 7737	1, 355, 258. 218	1, 702. 8550	39, 898. 889
Chemulpho	1, 091. 1610	284, 755. 770	14, 023. 6280	296, 955. 852

The number of mines is as follows :

Province.	Gold.	Silver.	Copper.	Iron.	Coal.	Lead.	Precious stones.
Kyöng Kui	3	1		2			2
Chhung Chhông	4	1		6			2
Ham Kyöng	16	2	4	4	7	1	1
Whanghai	9			5			1
Kangwön	14		3	6		4	2
Chöula	9			4			1
Kyöng-sung	17		7	10	2	1	3
Ph्योंg-au	10		3	3		1	1

* A *nyang* is a weight equal to 1.2 ounces. One *nyang* of crude gold dust of average quality is now worth about \$21 Mex.

† From here to end of table of mines is culled from Mr. Ito Yajiro's report.

From Mr. Ito's report it would appear that the exports of crude gold and silver from Corea are as follows from 1881 to 1884: gold, 3,785,033.191 yen; silver, 387,769.444 yen; making an average in round numbers of \$1,200,000 worth of each metal per year.

MINING METHODS.

Corean methods of working gold mines are very primitive. The tools employed are of the simplest kind, and are only those for washing out the gold from the soft earth of the valleys. Quartz has probably never been worked.

Quicksilver is somewhat used in collecting gold after washing. It may be, however, that gold will for many years be best obtained by washing in the valley.

The country presents the evidences of very great geological age, and the hills are very generally in great areas, made up of decomposed granite and other rocks, washed down into low foot-hills.

Tunnel mines are known to be in existence, more particularly in the northern provinces. Some are said to be very deep, and their ventilation so bad that miners cannot remain in them any length of time.

Mining laborers are said to number 60,000.

Iron is said to be very abundant at Chai-ryōng, in Whanghai province.

Coal has been found recently in large quantities and in fair quality in Ph्योंg-au province, near the capital city, Peng-yang, and on the banks of the Tatong River. This locality, which may be described as that of the mouth of the Tatong River, would seem to present some valuable features as a field for western enterprise.

The river is navigable for quite a distance. Near it are the two celebrated gold districts of Whanghun province, and on it and not far from these mines is the large coal deposit above referred to. The neighborhood is well populated, and is reported to be thrifty in many ways.

FUTURE PROSPECTS.

As yet no competent mining engineer, geologist, or mineralogist has made examinations in Corea, either private, or under the patronage of the Corean Government, from whom statistics as to mineral riches may be obtained. While the question is an open one, as measured by the absence of statistics, the evidences we have, such as they are, go to show that Corea as a field for mining enterprises will attract much attention in the future, and may prove to be much richer in mineral products than she has been represented by her neighbors.

It is very possible that belief in Corea's great mineral riches is a factor in the cause of the embarrassing political situation the peninsula is placed in between China and Japan, and this embarrassment may be very greatly augmented should such a belief take root in the European nations whose interests have already been drawn politically towards Corea.

GEORGE C. FOULK,

Ensign, U. S. Navy, Chargé d'Affaires ad interim.

UNITED STATES LEGATION,

Seoul, Corea, March 20, 1886.

MINING INDUSTRIES OF CHINA.*REPORT OF CONSUL WITHERS.*

The small advances made by the Chinese in developing and utilizing the mineral wealth of their country, mainly attributable to the innate hostility both of the people and the Government to any innovation on ancient usages and customs, would appear to have received recently an impetus in the province of Kuangtung which justifies the expectation of impending progress.

This is due mainly to the efforts and enterprise of Ho Amei, a native of Canton, who, after some years residence in Australia, has returned to his native province, with the accumulated knowledge and experience derived from his connection with mining enterprises in that country.

He has leased a silver mine at Tamchow, from which considerable ore had been taken, but the workings had been abandoned on account of water, which they could not get rid of with the appliances then used. To overcome the obstacle hitherto insuperable to mining as conducted by Chinese, he has provided mining machinery of the most modern and improved character.

But his efforts to secure from the Chinese Government the adoption of a more liberal policy in connection with mining operations are worthy of more attention. From a speech delivered by him a few days since at the opening of the "Tai Yu Shun silver lead mine," a few miles from Hong-Kong, we gather the following particulars, which are of importance in this connection:

He has obtained from the provisional Government of Canton permission to work the mines. He endeavored to impress the Government with the important fact that by opening up the mineral resources of the country not only would profits accrue to those engaged in this business, but that great benefit would be derived from the employment of large numbers of the laboring classes, thereby furnishing remunerative employment to them at home, preventing emigration and adding to the wealth of the country.

He also urged the establishment by the Government of an "office of mines," at which any person could obtain a license to open and work mines. This proposal has been favorably considered by the viceroy, who has memorialized the throne for imperial sanction. The viceroy has already appointed two totais as superintendents of the mining office, which was opened about the 1st of March, and for \$1,000 any Chinaman could obtain a license to work any mine in perpetuity, the Government receiving a royalty of the proceeds after all expenses are paid. This royalty the viceroy and high officials have fixed at 10 per cent. for silver; that on other metals to be determined hereafter. More than fifty applications for license has been sent in since this office was opened, but before license is granted the authorities will consult the residents in the vicinity of the proposed localities, to ascertain whether they object, for it seems admitted that unless the operators have the support of the public they cannot expect to succeed.

I have deemed these facts of sufficient interest to report them, as they are indicative of progress, and justify the expectation that the day is not far distant when the mineral resources of this country will be developed, and a demand be created not only for mining machinery of

the most approved patterns, but also for the services of skilled mining engineers and other operatives, whose services must, for a time at least, prove indispensable. I will add, that I have submitted this statement mainly because the Tai Yu Shau mine is located on the island of Lantau, only 6 or 7 miles from Hong-Kong, and that I had opportunity of judging by ocular inspection of the rich character of the galena exposed in the preliminary blastings.

R. E. WITHERS,
Consul.

UNITED STATES CONSULATE,
Hong-Kong, April 3, 1886.

MANGANESE DEPOSITS OF CHILI.

REPORT OF CONSUL DUNN.

The deposits of manganese ore in Chili may be said, practically speaking, to be unexplored; nevertheless, enough is known from the investigations of several eminent geologists to leave no room to doubt that the mineral in question exists in immense quantities in the Republic, and more especially in the northern provinces.

The first attempt to utilize the ore was made about three years ago, when a bed, situated at some distance to the south of Santiago, the capital of the Republic, was opened; but the cost of conveying the ore to Valparaiso for shipment proved an insuperable obstacle to the success of the undertaking, and it was abandoned.

After the abandonment of the undertaking just referred to, operations were commenced on a deposit of manganese in the province of Coquimbo, and in 1885, 4,118,015 kilograms of the ore were exported to England.

The beds of manganese in the province of Coquimbo are surface deposits, and the cost of taking out the ore is trifling, but the great difficulty is the expense of transportation to the coast. The bed which is being worked in the province of Coquimbo is situated in close proximity to a railway, and the ore is being conveyed to the port of shipment (Coquimbo) on very liberal terms; nevertheless, the cost of the ore by the time it is placed alongside a vessel in Coquimbo harbor ranges from \$10 to \$12, Chilean currency, per ton.

The price of manganese in England is quoted to-day at £3 10s. per ton for ore of a ley of not less than 45 per cent. The ley of the ore exported from Coquimbo has varied from 45 to 55 per cent.

It is a moot question whether, owing to the heavy cost of transportation to the coast, the shipment of manganese ore can be carried on with profit in normal times, and it is doubtful if exchange on London should rise to 30d. and freights to England should improve to 30s. per ton, whether the Coquimbo bed of manganese could continue to be worked to a profit.

As I have already stated, there is no doubt that immense deposits of manganese ore exist in the north of the Republic, but, so far as is known at present, they are situated at some distance from the coast, and, in all probability, would be subject to greater difficulties in the way of successful working than the Coquimbo beds, because the farther north we go labor is higher, the cost of transportation increases, and freights rise in proportion to the distance of the shipping port from the port of destination.

Taking it all in all, the working of manganese deposits in Chili may be said to be on its trial, and another year or two will be required to settle definitely the question whether the ore can be worked permanently to a profit or not.

D. M. DUNN,
Consul.

UNITED STATES CONSULATE,
Valparaiso, Chili, March 29, 1886.

REPORT OF CONSUL GRIERSON.

In answer to your dispatch regarding manganese ores, I have to inform you that about three years ago the first shipments were made from Chili, from the province of Valparaiso, and up to the end of 1884 over 10,000 tons were shipped from there, when the ores commenced to fail, and attention was called to this province, where large quantities are found among the mountains. It runs in ridges, the tops of which are generally visible, and, so far, the extraction has been easily done by crowbar, hammer, &c., the principal expense being the carriage to the port, averaging, placed alongside, about £1 per ton or more, according to the distance.

About 6,000 tons have been exported from here, the first cargo leaving in September last, the average containing about 52 per cent. of manganese.

There are immense quantities of manganese ores in the province.

J. GRIERSON,
Consul.

UNITED STATES CONSULATE,
Coquimbo, February 25, 1886.

MANGANESE DEPOSITS OF GREECE.

REPORT OF CONSUL MOFFETT.

The principal mines of manganiferous iron ore are at Laurium.

The production last year amounted to 25,000 tons. This can readily be doubled.

This ore contains, ordinarily, from 18 to 19 per cent. of manganese and from 34 to 35 per cent. of iron.

The cost of mining is about $3\frac{1}{2}$ drachmas (67 cents) per ton.

Cost of transportation to shipping port, smelting, &c., $3\frac{1}{2}$ drachmas; general expenses, 1 drachma; making total cost, including mining, smelting, transportation, &c., about 8 drachmas (\$1.54) per ton.

I know of no other mines in Greece producing iron ore.

W. H. MOFFETT,
Consul.

UNITED STATES CONSULATE,
Athens, February 4, 1886.

METAL INDUSTRIES OF EUROPE.

REPORT OF CONSUL TANNER.

There is one feature of the metal trade throughout the world that may not be noticed by the casual observer, and that is the precedence steel is now taking over iron.

The bulk of the rails used 20 years ago on railroads were iron. Now their use is comparatively insignificant, and the same may be said with regard to ship-building, for the revolution in this respect is as complete as in that of rails, so that now nearly all ships made of metal are of steel.

The manufacture of steel has been improved upon until the cost is not above that of iron.

I have called attention to the dissatisfaction existing, and growing, towards cheap German labor. This feeling rages in England, it exists in France and Belgium, and where it will terminate is not for me to predict, and time will show.

The following table will show the imports and exports of iron in Germany for three years :

Kind.	1885.	1884.	1883.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
Pig-iron:			
Imports	215,973.3	264,501.8	274,826.7
Exports	213,594.5	230,007.8	259,614.2
Puddled:			
Imports	7,492.8	7,768.4	9,170.6
Exports	63,230.0	67,108.6	92,203.8
Other manufactured iron:			
Imports	55,308.3	48,284.7	49,874.6
Exports	762,655.6	764,958.2	772,213.2
Bar-iron, exports	144,466.9	154,004.8	776,988.8
Rails, exports	164,791.3	144,452.6	176,177.5
Iron wire, exports	193,093.1	212,793.7	208,627.2
Other wrought, exports	58,851.9	66,756.4	61,463.0
Iron plates, exports	398.0	44,033.3	52,298.5
Wire nails, exports	38,769.2	33,617.3	28,150.0
Cast-iron goods, exports	24,935.5	18,715.6	17,075.4
Forged pipes, exports	17,102.1	19,046.7	19,540.2

The pig-iron trade of Germany for 1885 was distributed as follows :

	Double centners.*
Russia	627,475
Austria-Hungary	108,019
Switzerland	44,365
France	493,841
Belgium	485,898
Netherlands	143,044
Italy	19,693
Spain	21
United States	131,467
All other countries	3,699

* A double centner is about the tenth of a ton.

Germany exported other articles of iron, as mentioned under (in double centners):

Country.	Rails.	Bar iron.	Iron and steel wire.	Other iron goods.
Russia	3, 248	226, 889	6, 354	69, 421
Austria-Hungary	12, 945	57, 805	3, 964	65, 314
Switzerland	75, 356	144, 347	32, 225	26, 339
France	531	14, 327	95, 228	28, 859
Belgium	202, 965	109, 604	240, 589	37, 615
Netherlands	400, 437	194, 133	179, 718	81, 246
Italy	142, 089	319, 723	137, 429	92, 788
Spain	44, 454	4, 440	46, 147	5, 529
United States	23, 865	34, 895	394, 887	5, 362
England	49, 665	41, 053	847, 797	10, 472

The iron and steel exports for five years were as follows:

Country.	1885.	1884.	1883.	1882.	1881.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
Austria-Hungary	68, 640	107, 270	163, 340	119, 090	100, 100
France	82, 160	93, 550	109, 700	122, 740	121, 690
United States	61, 560	66, 190	80, 860	125, 640	149, 350
Holland	121, 810	171, 140	112, 840	88, 260	152, 000
Russia	111, 390	110, 190	104, 210	118, 370	149, 736
Italy	93, 590	87, 790	84, 740	60, 540	37, 430
Other countries	150, 090	109, 920	139, 790	104, 440	90, 070

STEEL CROSS-TIES.

I have called attention to the growing favor that steel cross-ties were meeting within Europe. Germany exported steel cross-ties in 1885 to the extent of 26,991 tons, against 17,000 tons in 1884.

Some of the South American States have ordered large quantities of these sleepers, and unless some means is devised for the better preservation of wood than is now known, steel ties will be universally used in Europe within the next ten years.

FRANCE.

As in other countries, France has suffered from depressed trade and low prices. Much complaint comes from iron manufacturers in France, Belgium, and England, in consequence of the difficulty of competing with the German low-priced labor, and there is much reason for complaints on this score. Belgium, which is a low-tariff country, pays twice as much for as long a day's work as the same workman would receive in Germany, and so does England, and so does France, which is a country with a protective tariff. The Germans, so far as low wages are concerned, are the Chinese of Europe, and much ill-feeling is felt by the laborers of other countries against their underbidding and securing work that they feel they themselves should have.

The following will show the imports of iron and steel in France for the eight months ending August 31, 1885 and 1884.

Product.	1885.	1884.
	<i>Tons.</i>	<i>Tons.</i>
Pig-iron	133, 721	133, 323
Finished iron	32, 989	59, 753
Steel	9, 045	10, 236

The imports of iron ore for the first eight months for the last three years into France have been:

Country.	1885.	1884.	1883.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
Belgium.....	78,509	136,989	130,097
Germany.....	349,631	285,833	272,263
Spain.....	399,171	300,056	363,012
Italy.....	1,713	39,546	55,087
Algeria.....	98,297	110,312	199,390
Other countries.....	11,263	16,466	72,804

France exported iron and steel to the extent of 54,662 tons in 1885, against 57,574 tons in 1884.

The production in France for the last four years is as under, in tons:

Year.	Pig-iron.	Manufactured.	Steel.
1885.....	1,628,941	771,299	527,048
1884.....	1,871,537	876,751	502,908
1883.....	2,069,430	978,917	521,820
1882.....	2,039,067	1,078,021	158,238

The output of steel in France for 1885 was the largest ever recorded in that country.

SPAIN.

Every country in Europe draws on Spain for iron ore, Great Britain being the most extensive importer, perhaps receiving 75 per cent. of the ore manufactured in England from Spain.

The following table will show the exports of iron ore for the last eight years from Spain:

Year.	Tons.	Year.	Tons.
1878.....	1,255,255	1882.....	3,787,176
1879.....	1,160,248	1883.....	3,428,187
1880.....	2,390,732	1884.....	3,194,698
1881.....	2,550,549	1885.....	3,294,698

This (as near as can be arrived at) was distributed as follows, in tons, in 1885:

Great Britain.....	2,050,519
France.....	492,144
Belgium.....	171,771
United States.....	6,357
Holland (for Germany).....	573,520
All other countries.....	300,000

The John Cockrell Iron Works—the third largest in the world—situated at Seraing, Belgium, has quite a fleet of steamers which ply between Bilbao, Spain, and their works, supplying it with ore.

BELGIUM.

The following is the official statement of the imports and exports of iron and steel during 1884-'85 compared (in tons):

Kind.	Imports.		Exports.	
	1885.	1884.	1885.	1884.
Iron ore.....	1,368,931	1,488,140	156,550	190,988
Cast steel (wrought).....	12	97	868	462
Steel rails.....	422	790	56,833	64,651
Other rolled steel.....	2,976	3,763	10,906	6,801
Wrought.....	461	558	1,913	2,427
Pig-iron.....	100,788	125,619	10,667	10,665
Old iron.....	17,799	13,869	7,851	11,118
Iron wire.....	4,064	4,043	2,194	2,242
Iron rails.....	136	763	10,181	19,742
Plates.....	851	880	32,022	38,516
Other rolled iron.....	5,359	6,505	227,581	222,611
Nails.....	434	370	7,588	6,837
Wrought-iron goods.....	2,751	2,705	28,093	21,670
Cast-iron goods.....	549	912	19,408	12,253

The recent discussion in high Belgian quarters as to ways and means has suggested some alteration in the entrance duty on foreign iron coming into Belgium. If this duty were removed or lightened, as suggested, freight must also be lowered in order that makers may be benefited by the new arrangement. It is not sufficient to reduce the rate on pig-iron; fuel and ore must also be reduced by lowering the railway rates, and they now average 4 francs 20 centimes from the Althus frontier to the blast furnaces, and any further reduction can hardly be expected in this direction. The introduction of large quantities of pig-iron would seriously injure another branch of trade by reducing the quantities of fuel, &c., required.

With regard to the freight, 750,000 tons of ore from the Grand-Duchy would place the Government in possession of 3,150,000 francs, while the introduction of 250,000 tons of pig-iron into the country at the rate of 5 francs 50 centimes per ton would give an additional 1,375,000 francs to the Government, but it considers the rate paid usually for coke and raw material, the sending of pig-iron to the mills, and the carriage of other secondary materials. These must amount to 2 francs per ton; therefore the reduction in the returns would be 2,275,000 francs.

If the manufacturers derive benefit from a change in the existing duties, other branches of trade would suffer, and the workmen would suffer also by the proposed alteration.

I have already mentioned the fact that there was much feeling throughout Europe against German laborers, because of the low rate of wages they will work for. This low rate operates in Germany and it operates at the very doors of the laborers in other countries.

There are 250,000 Germans in London, all of whom will work and do work for less than an English laborer will work for; and the English field of employment is curtailed just that much for a native Briton and it creates a tendency to reduce the price of labor.

GEORGE C. TANNER,
Consul.

UNITED STATES CONSULATE,
Chemnitz, March 27, 1886.

LABOR TROUBLES IN CUBA.

REPORT OF CONSUL PIERCE.

A brief review of the recent labor strikes in the island of Cuba would be incomplete if I omitted a consideration of two topics which have a strong and forcible influence. I refer, primarily, to the relations existing between the employers and the employed, and, secondly, to the heterogeneous character of the population in the island. We have here three pure races—the white, the black, and Asiatic (Chinese)—and worse than all, the result of the mixture, the mulatto, who has the intelligence of the white and endurance of the black. In many countries the immigration of the Caucasian race acts as an offset to the increase of the African. Here it is different. There is really no immigration, and owing to the peculiar habits of the inhabitants the mixed race is continually increasing. The result is manifest. It may not be a matter of the near future, but it is undoubtedly the ultimate result to be expected here. The climate does not invite white immigration. The island cannot get rid of the black nor of the Chinese, and an amalgamation is inevitable.

In a population of, at most, 1,500,000, the census reports show only some 600,000 white, and judging from the statistics of the past thirty years the necessary outcome can easily be foreseen.

RELATION OF EMPLOYERS AND EMPLOYED.

Cuba, as is well known, is essentially an agricultural country. It relies for its prosperity solely on the cultivation of the land. Manufactures have never taken root here, though there are some, of small amount, adding little to the mass of the public wealth. Information and considerable experience enable me to speak with some authority on the matter, and, so far as I can see, the tendency is to increase the divergence, which always occurs, between the (so called) higher and lower, or the proletariat class, which is inevitable in a country where divisions of property are so unequal as they are here. There are large landed proprietors, small holders, and slaves.

The latter are now nominally slaves only; even the name is no longer used. In official parlance they are *patrocinados*, but as far as servitude is concerned they are as much bound as they have ever been. In 1888, under existing laws, they will all be free, but as one-fourth of them are already at liberty, and another fourth will be liberated next year, it is not to be supposed that on an estate of one or two hundred negroes there can be kept and enforced the same discipline and exactness that is requisite when one-half of the servants are free by operation of law, and the other half are held to service by the same operation. It would be expecting too much of human nature that the half in servitude in daily contemplation of the other half earning wages should be obedient, submissive, and as entirely amenable to discipline as they were formerly. The owners of estates are also men brought up and educated with the natural indifference to the rights of labor which a system of slavery has engendered. Compelled by law, they assigned to the freedman a certain salary, but it is reduced to the minimum at which human life can be sustained. To the freed negroes at first it appeared like a fortune, but

our experience in the United States shows clearly that the African is not so bereft of natural intelligence as to ignore the first promptings of selfishness. He will, sooner or later, demand higher wages than are now given him, and this will be an additional cause of disturbance between the freedman and the others still held to servitude.

THE LABOR STRIKES.

In January, 1886, the strikes commenced in Havana and were successful. Following that came the strike of the coopers throughout the island in February, 1886. They demanded an increase of over 100 per cent. Formerly they averaged daily 87½ cents, gold. The increase asked amounted to \$1.12½, gold.

Some features of this strike are suggestive. Formerly the power and fear of the Government had crushed all attempts for a change. The Government confidently expected the same result in the coopers' strike, and to this end used the same machinery that in former years filled the jails with suspects and prevented any change in the existing order of things; and, again, the strikers formerly had been almost entirely Cubans. In the last strike everything was changed. The Spaniard as well as the Cuban and mulatto fraternized. The appeals and threats of the Government were fruitless. The leaders were summoned in Matanzas before the governor, and when these same leaders told the assembled strikers that the Government proposed and intended to hold them (the leaders) morally responsible for the continuance of the strike (and that expression here is easily capable of being truthfully construed into an order for court-martial), the strikers to a man replied, "We are all leaders."

In the ranks of the strikers are many members of the volunteer regiments. The number of the volunteers enrolled in the island is estimated at about thirty-five thousand, and when one day during the strike in Matanzas a squad of fifteen soldiers from the regular army were detailed for work on the river front and partly to aid one Galindez, who is colonel of a volunteer regiment, these soldiers were met by the strikers, who among other facts stated that during the insurrection the regulars and volunteers had fought side by side, the result was that the officer in command of the regulars marched his company back to the barracks. This significant action convinced the authorities that the army could not be relied upon in an emergency; and two days after, when a leader from Havana addressed the strikers here and used incendiary and threatening language, referring personally to high Government officials, and when Spaniard, Cuban, and mulatto alike cheered the speaker to the echo, then it was that the demands of the strikers were granted. Two weeks after the coopers' strike came the strike of the lightermen and weighmen, and they, like the coopers, were equally successful in every port of the island.

At the present time there is a wide spread and generally accredited rumor that, if not this year, at least the ensuing year, the strikes will reach the plantations. If they do, I foresee a fruitful source of disturbance, and though the history of the negro race does not seem to point to acts of vengeance or popular commotions, still they would not be unreasonably expected, and if they occur, though much popular clamor might conceal the cause and throw a stigma on the movers, a person judging matters below the surface, and disposed to take an impartial view of everything, could not really throw the entire blame on the poor inheritants of ages of slavery.

By the law, as now in force, the highest wages payable to a slave in servitude is \$3 in gold per month. Negroes, free and at liberty to contract their labor, can be readily obtained at \$4.25, gold; but there will certainly come a time when wages must be raised. The dominant class in the island is Spanish, utterly ignorant, and observant only of their personal interest.

They have the ear of the Government and control its movements and operations, and direct, through the *juntas* existing through the island, all matters of Government.

Up to the time of the strikes they had accomplished their ends. I do not hesitate to predict a speedy end to this state of things. Even the peninsular Spaniards are becoming, as was shown in the late strikes, tired and would welcome a change, and, as history repeats itself, it is not a matter of surprise if at any moment an insurrection should break out, which would not exhaust its strength as the other did in useless and fruitless "affairs of outposts."

I have reason to know that in several of the most trusted branches of military service there is much disaffection, and a disposition to take advantage of any opportunity to profit by any good move. I do not think it necessary to call attention to the well-known affection of the Spaniards to a "*Pronunciamiento*."

FRANK H. PIERCE,
Consul.

UNITED STATES CONSULATE,
Matanzas, March 5, 1886.

AGRICULTURE AND TRADE OF BELGIUM.

TABLES TRANSMITTED BY CONSUL GEORGE D. ROBERTSON.

Statement showing the estimated yield of the following crops in the province of Liege, Belgium, for the year 1886.

Kind of crop.	Estimated yield per acre.	Estimated weight of bushel.	Area cultivated.	Total estimated yield.
	<i>Bushels.</i>	<i>Pounds.</i>	<i>Acres.</i>	<i>Bushels.</i>
Winter wheat.....	26.4	60	60,099	1,724,207
Summer wheat.....	35.6	33.45	18,124	645,205
Bearded wheat.....	26.4	55	32,183	849,681.2
Rye.....	35.2	49.45	4,699	.....
Winter barley.....	25.3	34.9	66,297	2,698,308.25
Summer barley.....	40.7	61.8	1,742	49,251.75
Oats.....	28.1	.....	.....	.....
Beans.....	.....	.....	.....	.....
	<i>Tons.</i>	.....	.....	<i>Tons.</i>
Potatoes.....	6.5	.....	116,356	756,314
Sugar beets.....	12	.....	14,356	172,272
Beets for forage.....	14.7	.....	.....	.....
Carrots.....	7.9	.....	.....	.....
Hay:	.....	.....	.....	.....
Clover.....	2.1	.....	24,342	51,118.2
Lucerne.....	2.7	.....	3,112	8,402.4
Sainfoin.....	1.7	.....	26,125	4,441.25
Meadows:	.....	.....	.....	.....
First crop.....	.....	.....	.....	.....
Second crop.....	2.26	.....	87,780	198,382.8

I owe the above figures to François de Blolley, esq., the president of the Agricultural Society.—G. D. ROBERTSON, Liege, Belgium, June 18, 1886.

Coal and coke imported into, and exported from, the Kingdom of Belgium, during the first quarter of the years 1886, 1885, and 1884.

IMPORTATIONS.

Countries.	1886. 3 months.	1885. 3 months.	1884. 3 months.
COAL.			
Germany.....	82,746	132,070	122,795
England.....	81,818	75,205	61,062
France.....	35,600	21,150	22,785
*Holland.....	80,184	85,617	94,582
Other countries.....	9	9	
Total tons.....	280,307	314,051	301,224
Totals for years.....		1,237,449	1,223,691
COKE.			
Germany.....	3,440	2,920	7,840
France.....	863	1,185	3,856
Other countries.....	7	272	263
Total tons.....	4,310	4,377	11,950
Totals for years.....		22,863	32,813

EXPORTATIONS.

COAL.			
France.....	904,053	926,085	1,031,624
Holland.....	36,097	30,306	27,888
Other countries.....	49,878	39,231	29,813
Total tons.....	989,928	995,622	1,089,325
Totals for years.....		4,337,321	4,619,192
COKE.			
France.....	177,963	187,533	195,496
Luxemburg (Grand Duchy).....	31,863	21,950	21,155
Other countries.....	5,695	551	697
Total tons.....	215,520	210,034	217,348
Totals for years.....		856,421	854,258

*Although given as from Holland, this coal comes almost entirely from Germany and England.

Importations and exportations of iron and steel into and from the Kingdom of Belgium during the first quarter of the years 1886, 1885, and 1884.

Articles.	Importations.			Exportations.		
	1886. 3 months.	1885. 3 months.	1884. 3 months.	1886. 3 months.	1885. 3 months.	1884. 3 months.
Steel:	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
Cast.....	14	5	19	489	316	
Rails.....	49	62	146	6,561	13,496	9,152
Bars, sheets, or rods.....	495	906	1,179	7,239	910	2,769
Worked.....	49	73	102	185	375	228
Cast-iron.....	19,694	24,590	36,323	7,066	1,318	1,135
Old iron.....	2,137	5,802	3,684	4,989	873	3,731
Iron, wrought, rolled, and drawn:						
Rods or wire.....	714	1,442	1,821	646	438	304
Rails.....	1	40	237	1,863	950	3,360
Plates.....	169	352	154	8,198	7,108	9,169
Sundries.....	990	1,413	1,377	52,159	42,438	44,785
Articles of iron:						
Nails.....	121	91	81	1,535	1,754	1,236
Sundries.....	858	785	675	5,635	5,502	5,077
Other articles in cast-iron ..	155	138	129	6,669	4,865	2,339

AMERICAN ENTERPRISE IN CUBA.*REPORT OF CONSUL REIMER.***JURAGUA IRON COMPANY.**

It is with great pride and pleasure that I notice the growing importance and the rapid increase of American interests and enterprise in my consular district. In proof of this I need only refer to the Juragua Iron Company, which is entirely controlled by a syndicate of American gentlemen.

This company has built a railroad 27 kilometers long entirely of American material. The large iron pier at the terminus of the road, now 450 feet long and soon to be increased by an additional span of 125 feet, is also the result of American enterprise. The iron mines that furnish the ore which is transported to Philadelphia (I regret to say at present in English bottoms, which precludes the possibility of importing goods from the United States by these steamers, as England does not enjoy the privilege of a favored nation by treaty with Spain) are considered by the officers of this company to be inexhaustible. The present export of iron ore by this company has already reached the high figures of 15,000 tons per month, and will in the near future be increased to 20,000 per month and even more. The company employs a force of some 600 men, and when we consider that all the provisions and other necessities could be, and to a great extent are, imported from the United States, we can form an idea of what advantages the fostering and aiding of such enterprise must mean to our country. We also possess here a gas company supplying the city with excellent gas, built partly by American capital and wholly of machinery and implements manufactured in the United States.

There are also several American capitalists here commencing to increase and work up the mahogany and cedar exportation from here. One company in particular tends fair to soon control a most formidable tract of land in the northern part of this province, and is every day increasing its importance. So on every hand I see evidences of American enterprise. All our fellow countrymen laud the manner in which the Spanish Government here facilitates their movements by a readiness to help and aid them in every way.

TARIFF DISCOURAGEMENTS.

This only holds as regards the executive branch of the Government, and does not refer to the custom-house laws and regulations which tend in every way to discourage importation of all kinds. During the past years the commercial necessities of this district have been largely supplied by German, English, and Spanish products and manufactures, but our more advantageous geographical position towards this island and the excellence of our own manufactures and goods must and will give us the supremacy by proper and judicious fostering and aiding the introduction of our manufactures and products. As before mentioned, there are many disadvantages to labor under, and these lie entirely in the Spanish custom-house system; for instance, the Spanish custom-house officials have the privilege of retaining a share of fines imposed

on merchants or vessel for breach of custom-house regulations or rules. This, of course, prompts them to fine on all occasions, and for the slightest and most irrelevant error committed. They are also very exacting in their demands, and foolishly strict in their rules. This, of course, tends to discourage vessels from coming here, and should be borne in mind in negotiating a new treaty. I have so far succeeded from averting fines on American vessels with only one exception, but to exert influence where law should remedy these defects is not pleasant.

SANTIAGO DE CUBA AS A WINTER RESORT.

It has often been a matter of wonder to me why this city enjoys such a reputation as being the most unhealthy on this island. Physicians, even the very encyclopedia itself paints this city in colors that frighten the most fearless from coming here. This I might have understood when the port was crowded with sailing vessels remaining here for a long time waiting for cargo, whose crews, committing excesses and imprudences of every kind, laid themselves open to all kinds of disease, and caused epidemics to spread.

Should it be possible to dispel this erroneous opinion this place would not have its equal as a winter resort. During the winter months the temperature varies from 65° to 85° Fahrenheit. The mornings and afternoons are always cool and pleasant. The city is surrounded by lofty mountains and is itself situated on a hill which allows all drainage to run off into the bay, where it is carried out by the tide.

During the summer, sporadic cases of yellow fever sometimes occur, but these are the natural conditions of every tropical city.

Instead of being the most unhealthy, statistics have shown that it is one of the healthiest cities on this island. The American industries and enterprises are subjected to much annoyance and trouble as regards getting their countrymen to come here to work for them, owing to this bad reputation the town enjoys. It is impossible for me to remedy this evil without the aid of statistics and a thorough and continued canvassing of the sanitary condition of the city. Could I furnish these gentlemen with facts supported by such statistics, I could greatly aid them in dispelling this bad reputation.

LABOR QUESTION.

A question which at present greatly agitates the sugar growing, and in fact all producing interests here, is the question of labor. The negroes are inadequate in number, and those here are most unreliable, and, while good workmen, cannot be depended upon at any time, as they quit work as soon as they have earned a little money, which they spend, and when spent they return to work. This of course greatly impairs the possibility of systematical and profitable production and exportation, and is often the cause of a great loss of money to the producer.

Were it not that the Spanish Government in order to protect the industries of their colony allowed the soldiers of the various regiments stationed here to perform manual labor, this dearth of labor would, I am assured, have a very serious effect on all the industries of this island. The cost of living is very small, and can be fairly estimated for the laborer at 20 cents Spanish a day. During the sugar season the prices for labor vary from 50 cents to \$1.20 a day, and can be averaged at 80 cents per day. The sugar season lasts seven months of the year, from December to June, and during the remaining five months the sugar estates only

employ half their regular force; the other half can readily find work in agricultural pursuits at same wages. Other industries, such as mining, wood-cutting, and farming, of course employ their laborers continually.

In conversation with one of the largest sugar estate owners here, I learn that from 3,000 to 4,000 men can easily find work. This gentleman suggested the importation of the Chinamen whom we cannot use in the United States, as they are particularly adapted to this climate and to working in the sun. That laborers are most humanely treated here I can testify to from personal observation.

OTTO E. REIMER,
Consul.

UNITED STATES CONSULATE,
Santiago de Cuba, June 1, 1886.

CONDITION OF LABOR IN GERMANY.

REPORT OF CONSUL WAMER.

Recently published statistics indicate that the value of the exports from this country to the United States has latterly been on the increase, and while cheapness of labor here contributes largely to bring about this result, the fact must not be overlooked that Germany is at present giving every encouragement to the enlargement of her export trade. Indeed, the Germans are leaving nothing undone to push their goods in foreign markets. I am, though, inclined to believe that in many instances there is scarcely any profits, if any at all, made on these shipments. The exporters, however, seem to be content to wait for better times, and they go on exporting in the hope that an improvement will soon set in.

A remarkable thing connected with the exports to the United States is that German exporters consign almost entirely to firms in America of German origin, as the records of this consulate show that fully *ninety-nine per cent.* of such goods are consigned in this way. And it is here that I desire to bring before the attention of our merchants the advisability of also sending their agents abroad to push the sale of their goods.

The wages throughout Germany may be described as very low. In Westphalia and Rhineland wages are generally at their best, but in poorer districts the standard is much lower, notably in Upper Silesia, where the laboring classes earn from 30 to 40 per cent. less than in those districts even. In the latter a laborer, whether he works in iron or steel works, manufactories, coal mines, stone quarries, buildings, or railways, earns, as a rule, from two to three marks (say 47 to 70 cents) per day, and if he is a skilled laborer he may get three and a half to four marks (say 80 to 92 cents) per day. Female labor is allowed only in certain cases, and women, when employed, earn from one mark to one mark and a quarter (say 24 to 30 cents) per day. If a woman is debarred from getting employment, then she generally seeks to earn money by needlework, or light work of similar kind, so as to add to the means for supporting the family. Boys under sixteen years of age on leaving school are taken into employment, and receive eighty pfennigs to one mark (say 19 to 24 cents) per day, and extra strong boys may earn 30 cents per day.

The working hours are from 6 to 6 in summer, and 7 to 7 in winter; one hour is allowed for dinner, half an hour in the morning for breakfast, and half an hour in the afternoon for coffee.

On Sundays work is suspended, except when urgent repairs are required. The Government has no power or right to interfere with the working hours, but it takes care that certain restrictions with regard to the employment of women and children are observed.

Latterly, the system of paying the laborers by piece-work has been generally adopted, and the wages thus earned are on a scale already referred to. To provide for sickness and accident, as required by law, the workman is obliged to contribute to a saving fund out of his earnings.

HOUSE AND FOOD.

As to his mode of living, he requires for rent from twelve to eighteen marks (say from \$2.85 to \$4.20) per month, so that in fact one week's wages are entirely expended for this item.

For his meals he has to spend per day about one mark (say 24 cents), which sum is apportioned as follows:

	Pfenniga.
Dinner.....	40
Supper.....	30
Breakfast.....	15
Coffee, afternoon.....	15

Making in all 1 mark. or 24 cents.

His meals consist principally of potatoes (for dinner, potato soup with a slice of bacon), peas, beans, vegetables, common pork and black bread, sometimes dried fish, and now and then ordinary beef meat, but more frequently horse-flesh.

The laboringman is, as a rule, rather sparingly supplied with clothing and linen, and a white shirt is to be seen only on rare occasions. For these articles he has but little money left, and is often reduced to bargain for old and left-off clothes and things.

The careful laborer, however, finds it more to his interest to procure these articles, as well as the necessities of life, at the co-operative stores, which now exist almost everywhere.

Here the workingman finds the largest selection, the best goods, and the fairest prices, and if he can produce his tax receipt he is allowed to have goods on credit, the laborer engaging to pay on receipt of his weekly wages; those who are paid by the month are permitted to pay at the end of the month.

THE CREDIT SYSTEM.

But it seems doubtful whether the granting of credit at such stores is good and sound in principle or even advantageous to the laboring-man himself.

Speaking with a representative workman on the subject, he gave it as his opinion that the credit system was injurious. He stated as his reason that workingmen would always be found that did not, or would not, keep up their payments, and a man who once got into debt would find it difficult to set matters right again.

Thus the co-operative society would become eventually the losers and would seek to recover either by raising the prices or by furnishing articles of inferior quality. From this point of view the system of giving credit does not find favor with that class of men who practice nomy and are punctual in their payments.

There are, of course, some minor expenses which a laboringman has to provide for, but to which no special reference need be made, and taking a general view of his position it cannot be looked upon in a favorable light, and frequently the situation is aggravated by much illness, and perhaps by want of employment.

AID TO LABORERS.

However, much has lately been done to assist him and better his condition.

There is, for instance, the "*Wohlthätigkeits-Verein*," a society for charitable purposes, whose object is to help, especially in winter and in exceptionally difficult times, such families who can show that they are struggling with adversity and are otherwise entitled to public support. Such families receive assistance in money, clothes, fuel, food, &c., and in winter soup tickets are issued for the low sum of 10 pfennige (a trifle more than 2 cents). Besides, the society undertake to do their best to find employment or situations for those who are in want of the same.

In addition to the sick and accident fund already referred to, there has been established recently by parliamentary enactment the so-called "*Berufs-genossenschaft*," by which all the chief employers of labor are formed into separate societies, corresponding to their respective branches of business, for the purpose of insuring their workmen against sickness and accident, and making some provision for the workmen in old age.

As to the housing of the workmen, the attention of the Government is being given to this subject, and measures have already been taken in this direction in larger cities, but very much yet remains to be done. Many of the leading manufacturers erect at their own cost lodgings for their workmen and ask but a small rent, but there are a very large number of workmen who live in very small and ill-ventilated rooms. Indeed families of five and six in number often live and sleep together in one room, which certainly is not conducive to good health.

With regard to food, efforts have been made lately, especially at Berlin, to combine goodness with cheapness. Last year there were fifteen kitchens of this kind established in Berlin and provided 1,987,918 portions (of which 118,545 were whole portions, and 1,792,164 half portions for dinner, and 77,209 portions for supper); the receipts amounted to 303,093 marks, and the expenditure to 204,353 marks. In preparing the meals these kitchens used 1,275 cwt. meat, 99 cwt. bacon, 249 cwt. lard, 12,634 sausages, 316 cwt. flour, 11,492 cwt. potatoes, 3,252 cwt. beans and peas, 255 cwt. rice, and a large quantity of other things.

The state of health of the workingmen has, generally speaking, been good of late years, but there is one great and serious evil to be got rid of, and that is the excessive drinking of "*schnaps*."

The worst feature about this is that the quality of this liquor is generally very poor and frequently absolutely injurious, and whether the Government brandy bill—the so-called brandy monopoly bill, which was so much discussed this year in the *Reichstag*—was a mistake or not, it is undeniable that the proposed measure possessed one virtue, that it would have supplied the workingmen with a far better quality of brandy.

In conclusion, it is useless to conceal the fact that in spite of what has been done, and is still being done, by the German Government for the improvement of its laboring people, there are in some parts indica-

tions of discontent, and whether it may be ascribed to the tactics of the Socialists, or to the effect of the numerous strikes in other countries, is an open question.

To the Government, however, credit must certainly be given for its untiring efforts in trying to elevate the condition of its workmen.

WM. D. WAMER,
Consul.

UNITED STATES CONSULATE,
Cologne, May 21, 1886.

ALUMINUM IN GERMANY.

REPORT OF CONSUL-GENERAL RAINE.

I have the honor to report that in Hamelingen, near Bremen, a factory is in the course of erection which projects the production of aluminum (by German scientists called aluminium) and magnesium on a large scale.

The statement, however, that this will be the first factory of its kind in the world must be considered as erroneous, since Messrs. E. H. & A. N. Cowles, of Cleveland, Ohio (Cowles' Electric Smelting and Aluminum Company), have for some time successfully produced aluminum and its alloys in large quantities and at reduced prices. It is well known that heretofore aluminum and magnesium were produced only in small quantities at high prices.

GRAETZEL'S PATENT.

The consumption was comparatively limited. The new factory, like that of Cowles', projects production in large quantities under Graetzel's patent.

The process of the Frenchman, Deville, heretofore generally in use, consists in decomposing sodium-aluminum-chloride in reverberatory furnaces by adding to it, in a suitable manner, a flux (formerly fluor-spar, now cryolite), whereby the sodium used for reductions is replaced by zinc.

By this process the price of aluminum has been not less than 75 to 80 marks (= \$17.75 to \$20), a metal too costly for many technical purposes.

Graetzel readopted the idea of Bunsen, to separate the aluminum by electricity. He applies a very powerful dynamo-electric current, which he conducts through molten sodium-aluminum-chloride, whereby the desired metal is deposited at the negative electrode (cathode), but chlorine at the positive electrode (anode).

This process has been patented nearly everywhere. The aluminum, by its slight specific gravity—it is only $2\frac{1}{2}$ times heavier than water—has for a long time encouraged the hope that it could be produced in large quantities at a low price, and thus become more generally available for technical purposes.

Louis Napoleon spent large sums for experiments. Deville's process was the result. Napoleon thought that it could be used for the manufacture of military cuirasses and helmets.

PHYSICAL QUALITIES OF THE METAL.

The aluminum combines lightness with great durability, beauty, and plasticity. It can be drawn into fine wire (down to one-fifteenth millimeter in thickness) and beaten into thin lamels.

It is capable of taking a fine polish and can be engraved and by galvanism silvered and gilded. In the air it does not tarnish, and in water it remains unaltered. Though it is not a precious metal, it is, notwithstanding, not more subject to corrosion by acids and alkalies than iron. It is, however, not fire-proof; by combustion it is reduced to valueless alumina. Its fine, white, silver-brilliant, not-tarnishing color makes it very adaptable for ornaments of all kinds, opera-glasses, &c.

Besides the pure aluminum, also its alloys are useful for many technical purposes. A particularly beautiful bronze, brilliant like gold, is obtained from 90 to 95 per cent. copper and 10 to 5 per cent. aluminum.

Other compounds are stated to be eminently suitable for parts of machinery.

The *magnesium* is likewise by the electric current separated from a combination with chlorine.

F. RAINE,
Consul-General.

UNITED STATES CONSULATE GENERAL,
Berlin, March 5, 1886.

ROOFING SLATE IN INDIA.

REPORT OF CONSUL STUDER.

I am informed that the manufacturers of black roofing slate in the United States are desirous to obtain information respecting the uses of that article in India; that the slate area in the State of Pennsylvania was almost inexhaustible and as rapidly developed as the demand increased; that the manufacturers were desirous of extending their exportations to India; that large quantities had been shipped to Australia and other distant countries.

Last year I answered Messrs. Boyle & Co., slate-exporting financiers, of Philadelphia, anxious to extend their trade hereabouts, after recommending to them the appointment of an agency, to send to the same a trial consignment (which holds good to-day), as follows:

Thus far little slate for roofing has been used, tiles being generally used throughout India; and for cheap, light buildings (bungalows) the leaf of the attap-palm (thatch). It would be best to forward and consign a sufficient quantity for trial and introduction. I feel morally certain that without doing this you will not get orders. What slate has been used here for roofing (on Government buildings chiefly) was imported from England, and you are better able to judge as to whether you can compete with that country. The cost of freight on a sailing vessel would be about the same from Philadelphia as from an English port, I think.

Being directed to report upon all India, I must confess that, while I am pretty well informed about that vast country and islands belonging thereto (British and Dutch), I have never yet been in Upper India; but there are many here who have been there, and they tell me that for roofing houses about the same materials are used as in this colony, as follows:

MANNEE OF ROOFING.

1. For all substantial buildings (governmental, mercantile, and residential) *the half-round tile* (made of brick clay and baked) is used.

These are easily laid (joining in and out, under and over, and overlapping each other), and make an excellent, durable, as well as cool roof, in a tropical country, as they furnish air currents throughout (in a cold climate, unless covered with mortar or cement where they lap and join, they would not answer). A tile roof is, of course, very heavy, but as there is an abundance of very hard wood out of which to make timbers and frames able to bear it, it does not matter. Cooly labor is very cheap (ranging for all India for from 8 to 20 cents per day), clay and fuel abundant, and as a rule very near each other, and therefore tiles can be had cheap.

2. For plantation and cheap European residences, bungalows, and the dwellings of the native population in suburban and country districts and on farms, all having, as a rule, far-projecting roofs, the leaves of the attap-palm, the kadjang (a species of huge grass growing on low marshy river bottoms, shallow lakes, and lagoons in vast fields, as I have seen in the swamps of the Kassang River near Malacca),* and sundry other tough broad grasses and fibers suitable for thatching, are used and give general satisfaction, being very abundant, cheap, and answering their purpose well. A well-made attap or kadjang roof will last from three to four years, when it becomes brittle and as a consequence leaky, and must be removed.

3. For the roofs of coal sheds, wharves, warehouses, landings, bazaars and markets, verandas, and other airy, light, shed-like structures, having no walls and only posts or brick pillars for support, corrugated sheet-iron or fluted zinc sheets, this, with steadily increasing tendency, is used. This kind of roofing was first introduced here about twelve years ago.

NO PRESENT MARKET FOR SLATE.

As to *black slate* for roofing, it has been used, to my knowledge, on two new Government buildings having mansard roofs (within the last two years, *i. e.*, police headquarters and post-office), one mercantile building, and two churches. This slate, as none has ever been kept for sale here, was imported from Wales, in England, where, there being large quarries of it, I am told it is very cheap.

Firms in the United States engaged in the manufacture and export of slate can easily find out whether they can successfully compete with English quarries in Eastern markets, the cost of freight being about the same from our Atlantic as from ports in England (on sailing vessels, I mean).

Summed up, upon careful consideration and reflection (referring more to my consular district than all India), I hardly think that the sale of slate for roofing, from *any* country, will ever amount to much in the tropical part of Asia. But as some will be used, perhaps more and more as civilization, with a higher taste for architecture, advances, it would, I think, be well for our American slate exporters to create agencies in the principal ports of India and to forward to them trial consignments (not too small) of their productions. I know of no better way, if they can only compete with English or European exporters. It must be borne in mind at the same time that Calcutta, and perhaps Bombay excepted, we have no American firms in British or Netherlands India, and *must* rely on foreign merchants for the sale of any kind of American merchandise.

* I have read in some naturalist's books that the kadjang is a palm-leaf, which is *absolutely* not the case. It grew about as tall as an average corn-stalk out of water; its leaves resemble in shape and length and breadth a corn-leaf, but have a saw-like jagged edge. The stem of the kadjang is about as thick as a corn-stalk and as *readily* cut (the palm-nut).

I would recommend the creation of agencies at the following ports: Calcutta, Rangoon, Madras, Bombay, Colombo (Ceylon), Singapore, and Penang, Bangkok (Siam); Batavia, Sourabaya, and Samarang, in Java, and Manila (Philippine Islands).

A. G. STUDER,
(*Consul.*)

UNITED STATES CONSULATE,
Singapore, March 8, 1886.

CATTLE INTERESTS OF SWITZERLAND.

REPORT OF CONSUL-GENERAL WINCHESTER.

The following statistics taken from advanced sheets of official reports on cattle and other stock, and the importation of agricultural products in Switzerland, for the year 1885, may possess some interest and value.

The keeping and breeding of cattle in Switzerland is a very large and important interest, and one for which the country is well adapted, being favored with good grass, water, and air.

Considerable sums are expended by the various cantonal Governments upon schemes for the improvement of the breed of cattle and for the facilitation of their transport from the place of production to the market. While in pastoral countries generally cattle for milking, draft, and fattening are kept and treated separately, a single object only being kept in view, the Swiss cow is expected to unite all these qualities at one time within herself.

It is believed that a cow is positively benefited by being put to the plow, especially if the work be done in the morning, and few bullocks but many cows are frequently seen serving various draft purposes, not with the yoke, but with harness similar to that used for the horse. The improvement of Swiss cattle by judicious breeding and crossing with foreign animals has not been extensively or successfully attempted. The extremes of heat and cold, the rough weather, as well as the steep incline of so much of the pasturage in the higher regions, renders the native breed more likely than any other to adapt itself to such dangers and difficulties, and these qualities are especially sought to be brought out by careful selection in breeding.

It is said that a cow which at the time of calving does not give 18 liters (1 liter = 0.88 quart) of milk, is not considered of any value, and each cow is supposed to yield a hundred weight of cheese during the summer months. Cheese in some parts of the country forms the staple food of the people, and in those places the laborers are often paid in cheese.

New cheese will sometimes cause illness, and when that is the case, the patient is treated with *old* cheese, on the homeopathic theory. On wedding occasions it was formerly the custom to present the bride and bridegroom with a large cheese, jointly contributed by their friends, and this cheese was handed down, generation after generation, as a family register, on which were inscribed births, deaths, and marriages.

Some of these cheeses bearing date of 1660 are still to be seen. The larger the cheese the better its quality as a rule, and a man may be seen descending from the pasture ground with one weighing from 150 to 175 pounds on his shoulder. The exportation of cheese from Switzerland to the United States alone, for 1885, was over 3½ million pounds.

STATE AID.

The annual federal appropriation for the improvement of cattle varies, but is a considerable sum, and in the distribution of this fund, the federal Government looks to a just apportionment of the subsidy and is largely controlled therein by the assistance and encouragement given by the respective cantons to cattle breeding.

The large majority of the cantons give much attention to the subject, as well as material aid. The cantonal subsidies are made subject to various conditions, a few of which will show the general character. An annual examination of all breeding bulls is held at the district shows. Prize bulls must be used in the canton for at least one year after the show. Breeding bulls must be registered, and none unregistered may be so used.

Prize cows must also remain a certain time in the commune. A prize cow must not leave the canton before calving.

The most rigid and prompt measures are taken to check and suppress any contagious disease that may appear. As soon as any serious disorder appears, all cattle that may have been liable to contagion are at once placed under supervision, such as may be deemed necessary killed, and everything done required for the complete stamping out of the disease. The value of the property so destroyed is paid to the owners by the canton, and the canton is in turn reimbursed, according to custom by the federal Government.

CATTLE CENSUS.

According to the regular decennial census, concluded in April of this year, Switzerland has of cattle, 1,210,849; horses, 98,212; mules, 2,732; hogs, 394,330; sheep, 337,905; goats, 414,584; bee-hives, 207,362.

As compared with the last census of 1876, it shows an increase of cattle, 174,919; hogs, 59,815; goats, 18,529, and bee-hives, 29,537, a decrease of horses, 2,703; mules, 413, and sheep, 29,644.

SWISS AGRICULTURE.

In reference to the agricultural products Switzerland requires for annual consumption about 6,154,256 metric cwts. of grain, with a value of 147,000,000 francs. The home production amounts to about 2,458,300 metric cwts., valued at 59,000,000 francs, and therefore needs an importation to the extent of 3,690,956 metric cwts., worth 88,000,000 francs.

In addition, there is an average importation, as shown for the decennial period, 1875 to 1885, of 195,000 metric cwts. of flour. For the year 1885 the Swiss importation of grain and leguminous plants, wheat, rye, oats, barley, corn-flour, beans, peas, groats, and lentiles, were as follows:

Countries.	Metric cwts.	Countries.	Metric cwts.
Europe:		Asia:	
Germany	658,851	Asiatic Turkey	501
Austria-Hungary	1,277,257	British India	5,323
France	420,942	East Asia	167
Italy	244,317	America:	
Belgium	48,462	United States	9,221
Holland	10,368	Central America	296
England	892	Brazil	123
Russia	996,217	Argentina	2,330
Spain	500	Other South American countries	1,238
Lower Danube countries	11,605	Africa:	
Sweden	1,004	Egypt	217
European Turkey	1,876	Algiers and Tunis	2,801
		Australia	101

The quantity and value of this importation is represented in the following proportions:

	Metric hundred weights.	Francs.
Wheat.....	2, 699, 078	56, 680, 638
Rye.....	34, 973	585, 798
Oats.....	333, 462	5, 835, 585
Barley.....	141, 504	3, 042, 836
Corn.....	250, 026	4, 375, 455
Other grain.....	4, 917	142, 593
Flour, groats.....	302, 393	9, 222, 956

BOYD WINCHESTER,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Berne, June 4, 1886.

GOLD MINES OF COREA.*

REPORT OF MR. FOULK.

I send you herewith all the statistics of the gold produced and exported from this port and district, covering a period from November, 1883, to the 18th of the present month.

During the months of November and December, 1883, the value of the gold exported from this port was \$28,920. Previous statistics are unattainable, but the amount exported from the opening of the port is said to be very great. The total value of the gold exported during the year 1884 was \$110,265. The total value exported during 1885 was \$357,148. The value of the gold exported from the first of the present year to the end of March was \$89,641, while the amount sent away in one steamer this month (18th instant) was \$21,559.

These statistics, of course, do not account for the gold carried overland to Seoul, or for that which is taken north over the boundary, the value of which is said to be very great.

Nearly all the gold exported from here is produced within an area of 60 miles from the port.

The method employed by the Koreans in washing the gold is very primitive, and a great deal of the fine gold dust is lost. All the gold exported from here is alluvial, and I have not been able to satisfy myself yet that any other than surface gold is mined in this country, although I have seen a fair sample of gold-bearing quartz, and have been told by the natives that "stone gold" is produced in the northern part of this province, from which the gold is extracted by a crushing and washing process.

The number of people working last year in the gold fields is estimated at ten thousand, which was far above the average, and is accounted for by the fact that more people were allowed to go to the fields on account of the bad harvest, and which may possibly account for the increased amount of gold exported as compared with previous years.

There seem to be several different methods of obtaining mining grants. In some cases the miners appear to hold the claims by a payment of a fee, while in other cases the gold appears to be purchased by officials appointed for the purpose at a fixed tariff; of this, however, I am not certain; it is very hard to get any reliable information from the natives in relation to gold.

The principal mining place in this district is near the city of Yung-hung, about 40 miles from this port. However, gold appears to be found in considerable quantities in many parts of this country, noticeably on the Yumen River. Reliable information in regard to the quantity produced, however, cannot be obtained.

Gold is also found near Fusan, at Ma-san-pho, in fair quantity. The same difficulty has to be borne there as in other places, i. e., after getting down to good-pay gravel the

* See page 252 of this number.

products are generally flooded, and as the natives have no pumping appliances, the work has to be abandoned until the water falls.

The period of mining seems to extend from the time the crops are in the ground till the harvest time, people coming from all parts of the country to wash for gold.

You may have noticed in No. 1 of the quarterly returns, that in the "Treasure Table" for this port the amount exported for the quarter ending December, 1885, is given as taels 7,761,180; this is rather misleading, as it is not value, but weight. * * * Reckoning the value of the gold at \$20 per tael, the amount would be about \$155,000.

I am under the impression that gold in paying quantities is found at many places between here and Seoul. The greatest difficulty, as I have elsewhere remarked, is experienced in getting reliable information from the natives. One man will tell that a certain place is rich in gold, while another will say that there is none at all; the probability being, however, that they are both incorrect.

This province (Ham-Kyŏng Do) is rich in other minerals, copper and iron being found in large quantities not far from the port. At Kapoan, about 500 li north of here, good coal is said to be abundant, and copper and lead. I have not heard of coal nearer than that, although it is quite possible that there may be plenty.

Coal is found about 25 or 30 miles from Fusan. I have only seen the surface shale, but I have heard that people at Fusan have burned it and say that it is not good; however, it may be that it was not taken from a good depth.

C. A. WELCH.

I have recently learned that the Chinese officials and merchants are actively interested in the gold mine of Korea at Yung-Hung (near Wŏn-san). I have it on good authority that these mines were visited recently by the Chinese consul at Wŏn-san, and he has stated that there are 20,000 men working at the mines in the district.

Each man pays to the Government for the privilege of mining about 6 candareens, *weight*, of gold or its equivalent in money. The consul intimated his whim to go to Seoul soon, and that Chinese interest in gold mining at Yung-Hung would be extended.

There can be no doubt that China's policy with regard to Corea has, for a large section of its base, her cognizance of the undeveloped mineral wealth of the country.

GEORGE C. FOULK.

WŌNSAN, April 23, 1886.

AMERICAN TRADE WITH JAPAN.

REPORT OF CONSUL-GENERAL GREEN.

In order to arrive at the reasons for preponderance of the balance of trade between this country and the United States, I, on April 8 last, sent the inclosed circular letter, addressed to leading American importing firms here. I send copies of replies received from three of the leading firms here, which I think contain matter of interest and food for thought.

As the time is approaching when American manufacturers must look abroad for markets for their goods, and as Japan is a new country, commercially speaking, with what must prove a growing demand for outside products, it seems to me that the unanimously expressed opinions of Americans engaged in importing from America to this country must be of great value.

The letters themselves are clear, pointed, and I think require no explanation or comment.

The complaint as to kerosene handling, which is included in the letter of Messrs. Frazar & Co., is well founded. I have every reason to think,

from an interview I have had on the subject with the governor of the Ken, that a building will soon be erected in which to store the kerosene, thus removing the principal cause of complaint.

WARREN GREEN,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Kanagawa, Japan, May 13, 1886.

[Inclosure No. 1.]

UNITED STATES CONSULATE-GENERAL,
Kanagawa, April 8, 1886.

Messrs. Smith, Baker & Co., American Trading Company, Walsh, Hall & Co., Middleton & Co., Frazar & Co., Fletcher & Co., C. & J. Trading Company, Langfeldt & Mayers, Fraser, Farley & Co.

GENTLEMEN: The discrepancy between the export and import trade with this country and the United States is so great as to excite inquiry. As it is my earnest desire to further commerce between the countries, and especially to encourage the increase of importation of American goods, I have prepared the following questions, to which I beg you would give your closest attention and make an early reply.

(1) Why is the demand for English and other goods so much larger than American?

(2) What action of Congress or the State or other Department would tend to increase such commerce in your opinion?

(3) Is there any outside pressure brought to bear in promoting commerce of other nations? If so, what and how would you recommend said pressure be neutralized?

(4) In your opinion, can the United States consuls in Japan do anything to promote the commerce between the two countries?

Any reply to the above questions will be considered confidential if so desired. I am desirous of doing whatever is in my power to aid importers, and beg as exhaustive a reply as your time and your opinion of the importance of the subject would warrant.

WARREN GREEN,
Consul-General.

[Inclosure No. 2.]

YOKOHAMA, April 17, 1886.

WARREN GREEN, Esq.,
United States Consul-General, Kanagawa:

DEAR SIR: We have the pleasure to reply as follows to the questions stated in your letter of 8th instant:

(1) European manufactures are more salable in Japan than American manufactured goods, because the former are better adapted to Japanese requirements, are in general better packed, and are considerably cheaper in first cost.

Transportation from Europe is also quicker, and rates of freight by steamers lower than from America.

(2) In our opinion the most efficient action which Congress could take to increase the export trade from America, whether to Japan or to other countries, would be so to reduce duties on imports into the United States as to enable manufacturers of goods for export to compete with those of Europe.

We know of no other way (unless it be by Government bounties) by which American manufacturers can conquer markets now supplied by the cheaper products of Europe.

(3) The official representatives of several of the European Governments are instructed to further the commercial interests of their nations in Japan, and we understand that they do so very assiduously and intelligently.

The commercial reports of the British legations and consulates in China and Japan are well and much valued.

It would probably be very difficult to wholly neutralize the efforts of these representatives, but if American interests were similarly protected and promoted, the result might be advantageous to American trade.

(4) We do not see that United States consuls in Japan can do much to promote the commerce between the two countries, unless in the preparation and circulation of statistics of trade which, if of no immediate value, might prove useful in the future.

It would hardly be possible for the consuls to induce Japanese consumers to take American products at higher cost than similar articles could be obtained from other countries, and when American products can successfully compete with the products of other nations, the eminent trading characteristics of the Japanese and their keen desire to obtain what they want from foreign countries at the lowest possible cost, will certainly secure to the United States their fair share of the trade.

WALSH, HALL, & CO.

[Inclosure No. 3.]

YOKOHAMA, April 10, 1886.

DEAR MR. GREEN: I wish to make a reply to your inquiries received yesterday in regard to the commerce of the United States with Japan, but as my experience in the business has hardly been great enough to give much weight to any opinion I may have formed, I should prefer that my reply took the form of a personal letter to you, and be considered merely as an individual expression of opinion.

First. I think the larger demands for English and other goods is owing to their cheaper price and special fitness for the requirements of the Japanese trade. The causes tending to produce this state seem to me to be:

(1) *Cheap* and regular freight opportunities.

(2) English and other manufacturers making a special study of, and endeavor to cater to the export demand, while our manufacturers, whose products are "protected" to an extent which places them beyond foreign competition in the home market, are content to meet only the home demand, and while home competition makes them give good value, the highness of price permitted by protection makes the quality of most of the goods too high to export to a poor country like Japan.

Our manufacturers do not seem to care to make a special class of goods to meet the demand, but seem to expect the demand to adapt itself to their goods—a most tedious process, as I know from efforts to introduce the goods here.

(3) The Japanese, as a rule, are quite superficial, and are satisfied with appearance only, as may be seen in nearly all of their manners, customs, and habits.

To illustrate, they prefer to buy a cheap English cotton which *looks* well (they seldom wash their *clothes*), but is heavily sized and artificially made up, to a really good quality of American cotton at a somewhat higher price, but really worth the difference in wearing qualities.

This peculiarity of the Japanese is catered to by the manufacturers of other countries, and, while of course it is a question whether the policy of keeping a really high standard of goods will not in time create here, as it has in China, a demand for a really good article even at a higher price, it seems to me doubtful, as I do not think the Japanese appreciate true worth as well as the Chinese.

Second. I hardly think any legislation can stimulate a healthy increase of the trade in question, except it be free trade, which by causing our manufacturers to compete on even terms with other countries, and probably to seek a larger outlet at less profit or be driven from the trade, would compel them to study more especially the export trade. But other than considerations of the export trade would of course have to enter into any free trade legislation.

Third. The only outside pressure brought to bear in promoting the commerce of other nations, so far as I know, is in the shape of mail subsidies to the steamship lines, which perhaps enable them to take freights at less rates than otherwise, and the personal solicitation of the representatives of the various nations for contracts for Government supplies, &c., which I think influences the demand for other articles somewhat towards the source from which the Government obtains its supplies.

Fourth. Just how far a representative is justified in soliciting favors for his nation's trade, I do not feel competent to say, although I should say his influence might be used to secure for the manufacturers of his country an equal chance to make offers for Government contracts.

I doubt if any official action can do much to promote private trade which it seems to me must depend on the fitness of the goods and prices they demand.

Trusting that my answers and expressions of opinion may aid you in the matter you have in hand,

I remain, &c.,

J. OTIS AVERILL, JR.

[Inclosure No. 4.]

YOKOHAMA, April 16, 1886.

WARREN GREEN, Esq.,
United States Consul-General:

SIR: In reply to your series of questions contained in your communication of 8th instant, we beg to give you our views as follows:

(1) The demand for English and Continental manufactures is the result of most careful cultivation on the part of the manufacturers at home and their agents here, and has only been developed by the expenditure of much time and money extended over many years.

To English and other European countries densely populated, their foreign trade may be called their life-blood; without it their people would starve, and as a consequence the most distant markets are carefully cherished and most jealously watched by them.

Every effort is made to please their customers; the materials, form, color, packing, and even adulteration of goods, are all studied to suit the tastes of the foreign buyers.

The Japanese are very exacting in this respect and of some goods, notably mouselines de laine. There must be succession of styles as the native fashions dictate, colors and designs which were fashionable a year or two before becoming speedily almost unsalable.

In order to meet this demand for something new and attractive, designs are diligently sought among collections of ancient art; copies of classic miskikis are sent to England to reappear on Manchester goods sold in Bentsen dori, where the modern Japanese often sees for the first time these specimens of his forefathers' art.

The habit of making what this market requires enables the English and Germans to produce the goods for considerably less than it would cost others to begin the trade, even if the latter were as favorably circumstanced in other respects.

In contrast with the above, American manufacturers, as a body, care little or nothing for foreign market and refuse to adapt their products, even in packing, to the requirements of other nations. This complaint may be found in almost any issue of the commercial reports of United States consuls, and comes from all quarters of the globe.

The home market has, hitherto, been so elastic, the returns so much quicker, and their knowledge of it so much more complete, that American manufacturers have been unwilling to take the trouble or to incur the risk of loss and certain expense of competing with European manufacturers for the trade of Japan.

No doubt the time is near at hand—it has already come for some goods—when the output of American mills and foundries will no longer find customers at home, and an outlet abroad will have to be sought under great disadvantages. But this day has not come yet for the cotton-yarn spinners, as the southern mill owners find a ready sale at the north for all they can produce. Still, the fact that an immense amount of capital is being invested in these yarn mills points to a production in excess of home requirements at an early day, and it is none too soon for their agents to prepare the way for sharing with England and India the trade with Japan in this the most important of her imports.

(2) The only action of Congress which occurs to us as likely to increase the demand for imports from the United States, is to take care that in the revision of the treaty with this country the duties on such goods are kept as low as possible, and to exert what influence it possesses to prevent vexatious restrictions being placed on transactions between natives and foreigners, by organizations like the Machi Gaisho at this port.

(3) We have reasons for believing that political favoritism has a great and often deciding influence in determining to what country orders for foreign goods, which are at the disposal of Government officials, shall be sent.

As such orders include all railway material, war and naval stores, a great deal of industrial machinery, &c., it can readily be seen how desirable these are, and that the competition to secure them is very keen.

It is a well-known fact that of late a large proportion of these orders have been given to German subjects, and, if the local newspapers are correctly informed, this has been brought about by diplomatic pressure on the part of the late representation of Germany at the court of Tokio. It would appear from what has recently transpired in the House of Commons that the representative of Great Britain may be expected to take similar action. So that unless American merchants have as favorable consideration their country's manufactures are likely to be neglected.

(4) The assistance of United States consuls in removing unnecessary burdens and restrictions upon trade, to which we have alluded under our second heading, would be a great value.

As an instance of what we refer to, we will cite the case of kerosene oil, which is the only considerable import from the United States. In this trade the condition

and appearance of the wooden boxes in which it is packed are of great importance; and they are easily deteriorated by exposure to rain and dampness. Now the oil must be landed in open boats, the only available lighters, and carried a mile or more up a narrow creek, which only serves at certain states of the tide, to the Government warehouses. On arrival there the boxes must be piled up in order, within an open stockade, to suit the convenience of the officials for counting and stamping. In this open inclosure the boxes are at times detained for days, during the rainy season, exposed to the weather; and finally when they are taken to the go-downs to be stored, the mud, which abounds, is freely tramped upon them by the piling coolies.

The repairing inclosure, also without cover, which was destroyed last year in August, has never been replaced, and repairs must now be carried on in boats at great expense and inconvenience.

Several of the go-downs are so damp that goods stored in them for any length of time are much deteriorated.

Considering that consignees of kerosene are compelled to use the Government go-downs, and pay a high rate of storage, it seems to us that better accommodation should be provided. The limited hours for receiving and delivering oil; the practice of stamping *every* box as it comes in and goes out, notwithstanding that cargoes frequently consist of over 60,000 cases, and deliveries amounted to 1,000,000 cases last year, and the want of suitable provision for handling the oil on arrival, all hamper the trade.

Prices have been the reverse of remunerative for some time, and the additional burdens imposed by the conditions enumerated above are therefore the harder to bear, more particularly as for the most part they are not incurred at the other treaty ports of Japan.

Regretting that we have been unable to reply to your communication at an earlier date,

We remain, &c.,

FRAZAR & CO.

NOTES.

Phylloxera in Spain.—Under date June 5, 1886, consul Darius H. Ingraham writes:

While the phylloxera and mildew have attacked the grape in the neighboring provinces of Malaga, the Granada coast, Almeria, and Murcia, it has not as yet made its appearance in this consular district, which includes the Xerez vintages bounded between Point St. Mary's and the river Guadalquivir. The crop at this date is promising.

Munich's Beer Trade.—Last year 19,067,180 imperial gallons of beer were exported from Munich, or 4,646,629 imperial gallons (33 per cent.) more than in 1884. In this export the breweries contributed as follows: Spaten, 4,300,330; Pschorr, 4,021,255; Löwenbräu, 2,883,370; Hackerbräu, 2,172,907; Franciscanerbräu, 1,846,453; Augustinerbräu, 896,894; Bürgerliches Bräuhaus, 884,427; Schmederer, 835,132; Münch-enes Kindl, 720,726; Hofbräuhaus, 448,722; Eberlbräu, 294,973 imperial gallons, the rest falling to smaller breweries. If the beer manufacture and import of Munich are taken at 44,052,863 imperial gallons, the consumption of the town would thus appear to be 24,985,682 imperial gallons, equal to 95.8 imperial gallons per head yearly, or 0.27 imperial gallons daily. That is pretty fair, even for Munich.

JOSEPH W. HARPER.

MUNICH, *June 5, 1886.*

The Bavarian Textile Industries.—It is the opinion of authorities on the subject that if a general improvement in the textile trade should not set in very soon the depression of 1885, instead of becoming less, will grow more intense, and this is all the surer from the fact of new works being started. Simultaneously with the publication of the yearly report of the Augsburg Chamber of Commerce the reports of the Bavarian factory inspectors appear, and according to these six works—one for cotton spinning, four for cotton weaving, and one for linen thread for very fine yarn—were established last year. The spinners recognize, however, that with overproduction they suffer severely, but they think that because the weaving works work very favorably the overproduction cannot be so great. This is a great mistake, which will before long become apparent. It will be seen that when the new power weaving establishments now being set up in Bavaria and Württemberg—Sonthafen, Bayreuth, and Nürtingen—are got to work, the overproduction will further increase and the evil will soon become perceptible.

JOSEPH W. HARPER.

MUNICH, *May 1886.*

Crops of Austria.—Consul-General Jussen transmits the first crop report for the season of 1886, showing the condition of the crops at the close of the month of May, ult., in the Empire of Austria:

During the first half of the month of May the weather was very cool, but during the latter half of the month it became intensely hot and an abnormal temperature prevailed with a total lack of rain. There were only occasional thunder and hail storms, and consequently complaints of drought are universal throughout the Empire.

Of the winter grains, wheat is comparatively in the best condition. It stands medium good on an average.

Rye has suffered more than wheat by the drought, and in many regions, particularly in Galicia, it is only middling.

Rape seed has suffered under these conditions of the weather, particularly in the northern provinces, and is at present only weak middling.

The summer cereals are growing slowly, and in consequence of the want of moisture show a scorched appearance.

Potatoes are generally in a good condition, but beets have not grown well, and a partial reseedling has been necessary.

The prospects for a large fruit crop are not very flattering. The weather and insects have injured the blossoms.

Grapevines are in good condition and a good crop is to be expected.

Hops, according to the majority of the reports, offer a good prospect. In some regions, however, they have been injured by hail. (Vienna, June 11, 1886.)

Trichinosis in Germany.—Consul-General F. Raine, writes from Berlin, June 19, 1886:

It is a noteworthy fact that since the exclusion of our hog products cases of trichinosis have not decreased in Germany. On the morning of June 3 the meat of twenty hogs slaughtered for account of a sausage butcher was microscopically examined by experts in the "central yards" at Berlin. The meat of fourteen of the hogs was condemned. All was full of trichinae. In many instances pieces of meat not larger than one grain of oats, which, after being crushed, represented a surface of one centimeter (a little more than $\frac{1}{16}$ th inch) contained forty and more of the parasites. The authorities congratulate themselves upon the vigilance of the public meat inspectors, though the consumers become more convinced every day of the fallacy of the theories which led to the exclusion of the American hog products from the German markets.

Cable facilities in Africa.—Consul Peter Strickland writes from Gorée-Dakar, under date June 15, 1886:

The British cable-laying steamers *Buccaneer* and *Dacia* were here on the 7th instant, and after coaling proceeded on to connect by cable this place with the River Gambia, Sierra Leone, the gold coast, St. Thomas, and St. Paul de Loando. After the work is completed the *Dacia* will return to England while the *Buccaneer*, which is a much smaller steamer, will be stationed on the coast to assist in caring for the cable. Between here and the mouth of the Debruka River, which is near the southern limit of the French possessions, the cable was laid last winter, but was not connected with the British possessions because the companies hoped for a subsidy, as they have obtained from the French and Portuguese Governments.

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UNITED STATES CONSULAR REPORTS.

REPORTS

FROM THE

CONSULS OF THE UNITED STATES IN GERMANY

ON THE

AGRICULTURE AND MANUFACTURES

OF THEIR

SEVERAL DISTRICTS.

No. 66.—August, 1886.

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* By an error two of Consul Potter's reports are printed as by J. F. Potter, instead of J. S. Potter.

CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC.

No. 66.—AUGUST, 1886.

WOOL MANUFACTURE IN GERMANY.

REPORT BY CONSUL POTTER, OF OREFELD.

The introduction of new and improved machinery for the manufacture of all kinds of silk goods has been rapid in this district during the last four years, and public attention has been directed to the subject in various reports transmitted to the Department. But not until very recently has there been developed any noteworthy improvements in machinery for the manufacture of woollen and other textile goods.

NEW WOOL-CARDING ENGINES.

An interesting, and apparently very practical, improvement in wool-carding engines, equally well adapted to cotton and all other fibers, has recently been perfected by an ingenious mechanic and inventor in Düsseldorf by the name of Peter Ludwig Klein. The invention has been tested for more than two years, and is now being rapidly introduced into woollen mills in Germany, Belgium, and France.

I regard the invention as important, and presuming that a brief description of it would be of interest to manufacturers and others in the United States, I have several times visited one of the most successful, progressive, and widely known mills in Germany, where twelve of these new carding, drawing, and unburring machines have for six or eight months been in operation, and there carefully examined their work.

With a view of conveying information of some practical value to manufacturers and others who may desire to institute comparisons between American and German mills and their methods of production, including elements that enter into cost, quality, &c., of goods produced, a description is given of the plant of the mill referred to where these new carding-engines are in use, and samples of the goods there manufactured, and also of the peculiar work performed by the new carding-machines, are forwarded with this report.

The advantages claimed for the new carding-engine are:

(1) The destructive picker is not needed with this machine, and the natural length of the fiber is fully preserved, as the wool, after being washed, goes direct from the drying-room to the carding-machine. Thrums, waste yarn, &c., are, without preparation, put upon the feed-apron, and all is delivered to the doffer thoroughly carded. Picking machinery, cost of running same, and danger from fire in picker-room become defunct elements where this carding-engine is in use.

(2) The wool is freed from burrs and other foreign substances while passing through the feeding apparatus, and *before* it reaches the main cylinder is thoroughly cleaned, and after passing over one main cylinder the fibers are evenly and parallelly laid upon the doffer. A finer and stronger yarn is therefore produced from the roving, and less delays occur in spinning.

(3) No fiber is thrown out with the foreign matter, and there is absolutely no waste of fibrous material. A saving of 3 to 6 per cent., according to quality of wool, is confidently claimed on raw material alone.

(4) The wool is as thoroughly and evenly carded upon a machine with one main cylinder as heretofore has been done upon two machines with one main cylinder each. A corresponding saving in cost of machinery, room, and labor is therefore claimed.

(5) As the wool is delivered to the main cylinder freed from foreign substances, and with the fiber in nearly parallel positions, there is a great saving in the wear and tear of card clothing.

(6) It is claimed that the new carding-engine is more durable than any other without being more expensive, and that not only an important saving of capital and labor is secured, but the fabric produced from its work is of a finer and more durable quality, and consequently commands a quicker market and higher price.

DESCRIPTION OF THE MACHINE.

Every part of the carding-machine is made of iron or steel. There is no wood-work entering into its construction.

In order that it may be seen in what way the advantages above enumerated are accomplished, the following specification and accompanying drawings, copied from the patent papers recently issued from the English patent office, are given:

The endless feeding-table 1 (Figure 1) carries the wool in large flakes towards the rollers 2 and 3, which in place of the ordinary clothing are provided with teeth extending over the surface in a spiral line. A spiral furrow or groove is cut into the material of the rollers between the teeth, Figures II and IV, these double spirals winding to the left on roller 2 and to the right on roller 3, that is to say, in opposite directions.

The two rollers are so placed that the teeth of one enter the groove of the other, and *vice versa*.

The wool while fed to the carding-machine is caught up by the points of the teeth only and pressed against the bottom of the corresponding groove, whereby the usual irregular feed of large flakes and the resulting tear of the fibers is avoided. The wool fills hereby the grooves and glides easily on the smooth surface forward, without any other obstruction than the friction necessary for its soft and even progress. Thus the roller 5 (Figures I and III) provided with equal spiral groove and teeth is allowed only to take up small flakes, being of but half the size of those fed by the table, as the lower part gliding faster on the polished surface of the groove is softly taken from the upper part held by the teeth, and gliding on slower by the said roller 5 in the direction of the fibers.

This way of dividing cannot be injurious to the staple of the wool, as it is done in the direction of its length, but it greatly assists to equalize the wool during the beginning of the feed. For the better sparing of the fiber the cylinder 5 is provided with

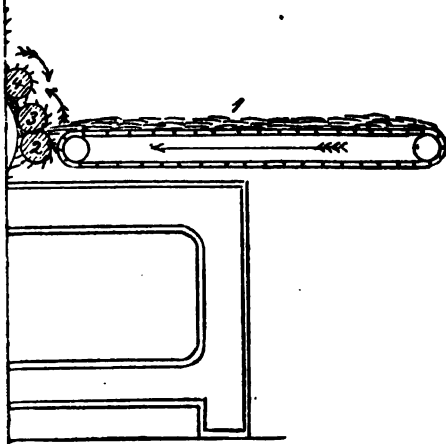
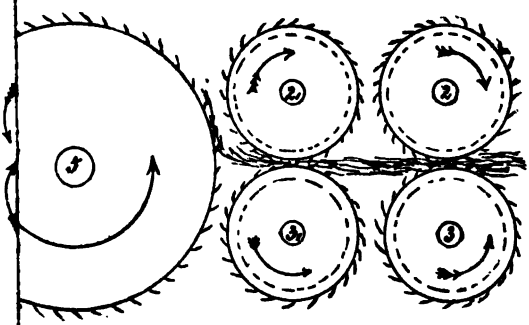


FIG. 6.



the spiral groove and teeth, as already stated, and a great quantity of wool may be allowed to pass, and short teeth standing far apart may be employed instead of forcing it through the long and narrow teeth of the ordinary clothing, which tears the fiber, as every spinner knows. Also the stripping-roller 4 can for better security be provided with the spiral groove and teeth, its teeth entering the groove of roller 5 in the same manner as the rollers 2 and 3 match together.

It is obvious that by means of such a soft and regular feed the wool is not torn, but preserves its original length, which has the great advantage (especially for the long-wool spinner) that the carding-engine makes less waste and produces proportionately so much more sliver.

In order to obtain this result in still higher perfection we arrange between the rollers 2 and 3 and roller 5 another pair of rollers, 2' and 3', similar to 2 and 3, having annular grooves instead of the spiral grooves already described, as shown in Figure V.

This arrangement is represented in Figure VI, wherein the rollers 2 and 3 are the spiral-grooved rollers, and 2' and 3' the rollers with annular grooves. The latter rollers are intended to act at the same time for the feed and draft, and also to support and facilitate to a great extent the separation of the wool from the adhering burrs. These annular-grooved rollers are constructed in a similar way to the spiral-grooved rollers, only with the difference that the grooves and teeth extend over the surface in rings, while the rollers first spoken of have the furrows and teeth arranged in a spiral line. The position of rollers 2' and 3' to each other is such that the teeth of one roller move in the grooves of the other, and *vice versa*.

The circumferential velocity of both rollers 2' and 3' is the same, but they revolve at a greater speed than the spiral-grooved rollers 2 and 3, thereby drawing out the wool passing from the pair of rollers 2 and 3 to the rollers 2' and 3', which draft can be regulated by changing the speed of rollers 2' and 3'. The wool is then taken from the rollers 2' and 3' by the roller 5 and led on for further treatment.

All these rollers can be arranged for being heated by steam.

Before the wool is taken up by the picking-roller (which in the ordinary carding-machines is done in the most rough and incomplete way), we allow the cylinder 7 to take it up from roller 5, which, having a greater circumferential speed, draws the wool softly through the teeth of roller 6, which turns slower than roller 5, and consequently presents a certain resistance to the passage of the wool. By means of this soft and regular draft the wool is not torn, but the burrs, &c., contained therein are loosened, so that the separation on the picking-roller is made easier. The picking-roller 9 turns faster than 7 and 8, and draws the wool again through the teeth of this cylinder, whereby the fibers are laid parallel and are again loosened from the burrs, which are now taken by the guard or burring-roller 10 and thrown upon the sheet-metal receptacle 11. The roller 12 has the same velocity, rollers 13 and 14 a greater velocity than roller 9, which produces another draft of the wool in the teeth of roller 12, and as the second picking-roller, 15, revolves faster than roller 14 the fiber is here again exposed to a certain draft. By this manner of operating the fibers are loosened from the burrs in such a way (instead of removing them by hard blows, as is done now) that the guard or burring roller 16 removes the rest, easily throwing it upon the receptacle 17. This draft repeated several times facilitates, as indicated above, the cleaning of the wool, and causes at the same time its coming even between the picking-roller 15 and the clearer 19, which in stripping the latter inverts the said wool in such a way that the third picking-roller, 20 (revolving only with the speed of an ordinary worker but in opposite direction), takes up but the upper half which was not cleaned by the guard-roller 16, presenting it to the guard or burring roller 21, which removes the remaining parts of burrs, &c. While the clearer 19 presents the one half of the wool placed on the bottom of its teeth to the main cylinder, the picking-roller 20 offers the other half. These two rollers have a smaller circumferential speed than the main cylinder 22, consequently the wool is stretched out by the latter once more, instead of being crowded upon the main cylinder in irregular flakes, as is done on the ordinary carding-engines, on account of the excessively high speed of the rollers leading the material towards the main cylinder. The portion of the material carried by the main cylinder to the worker 23 is here caught up by the teeth of the faster revolving roller 25, and thus drawn again through the clothing of the worker, and is then by the clearer 24 returned to the main cylinder. This process of drawing out is repeated upon every following worker, and supports most efficaciously the carding of the wool, sparing at the same time the wool and the clothings. The fancy roller and the doffer work in the ordinary way, but it is obvious that the fleece taken off by the vibrating comb will be better worked, equalized, and opened than on the carding-engines of the present system.

A FIRST-CLASS WOOLEN MILL IN GERMANY.

For the purpose of obtaining reliable data relating to elements of cost, quality, &c., that enter into the production of fine woolen goods in Ger-

many, and such as are exported to the United States, I addressed a series of questions to the eminent proprietor of a well-known woolen manufactory in Rhenish Prussia, with a request that he would furnish carefully-prepared answers for public use. The request was courteously and fully complied with, and, as the most practical way of communicating the information thus obtained, the questions and answers are given just as they were prepared.

Mill building.—The cloth-mill is composed of a series of connected stone buildings, three and four stories high, and lighted from side windows. Some of these structures are old and irregularly situated, the result, no doubt, of additions which have from time to time been made to meet the demands of an increasing business.

The worsted-yarn department is a new brick structure, built with reference to elements of safety, economy, and convenience in management, and the comfort and health of those employed in it.

The building is only one story high, without basement. The floor is on a level with the sidewalk, and the principal room is about 300 feet long by 150 wide. This room contains all the machinery, with the exception of the boilers, engines, wool-washing machinery, drying machinery, &c., which are in separate buildings, divided only by a wall from the larger structure, but the floors are all upon a level with that of the great carding and spinning room. There are no stairways or elevators; not a single up or down step is taken to enter the building or in visiting any part of it. The floor is made of what is here termed "beton," and is covered with a light-colored cement, which is as hard and smooth as marble, and quite as handsome and as durable. The interior of the building is wholly lighted from the roof. Running the entire length of it from east to west are seven rows of windows, set with a pitch of 36 degrees to the north, and so arranged as to admit an abundance of soft, steady light from that direction. The roof is supported by heavy iron beams, which rest upon iron columns set 23 feet apart. The main beams are laid from east to west, and the cross-beams are constructed with especial reference to supporting the lines of shafting and stiffening the main structure, which is apparently as rigid and firm as if cut from a solid rock.

The roof is so constructed as to contain two air-spaces between the inner lining or ceiling, which is hard-finished, and the outer covering, which is of heavy matched tiles. One of the divisions of the air-spaces is composed of "cork-stone," and this has been successfully adopted for the purpose of securing perfect ventilation and protecting the workmen against the heat of summer and the cold temperature of winter. The window-frames are so arranged that when open they drop down towards the interior.

The entire establishment is heated by steam and at night illuminated by electric lights from above.

The proprietor claims that the advantages secured by a one-story factory of this description over those of many stories greatly outweigh considerations connected with higher cost of land for building purposes. Among the advantages referred to are very important improved sanitary conditions, greater strength, steadiness, and safety in building, less wear and tear of machinery, and less expense for repairs; security against fire and cheaper insurance; convenience and economy in management; the superintendent and overseer have the operations of every part of the mill always under their observation; better light, better ventilation, better work and more of it, and comfort and contentment among operatives.

Nearly all new factory structures in Germany are now built like the one here described, with which the proprietor is so well satisfied, after three years' experience with it, that he is about to construct another and larger mill on the same principle.

BETON.

The article of beton, previously referred to, is, in Germany, made of the best quality of cement and clean, small pebble stones from the shores of the Rhine, or of clean, coarse gravel, mixed in the following proportions: 1 part cement and 7 parts pebble stones or gravel. This is usually laid directly upon properly prepared, firm ground, no other foundation being necessary. The beton should be spread on from $3\frac{1}{2}$ to $4\frac{1}{2}$ inches thick. To make a fine finish this mass should then be covered to the depth of one-half an inch with fluid cement, prepared with 1 part best quality cement, mixed with 2 parts of clean, sharp sand. This should be equally and smoothly laid on.

For machinery generally used in a woolen mill no other foundation is necessary, with the exception, perhaps, of the head-pieces of self-acting jacks or mules. Carding and other machinery may set directly upon the beton floor, which is amply firm enough for the purpose.

This is an American invention, but the Germans prepare it with more care and better material than is customary with American builders. No loam or dirt should be allowed to enter into the preparation. The material should be *perfectly clean*.

Sometimes small pieces of different colored marble are sunk into the surface of the cement covering of the beton, when it is laid on and arranged in mosaic form, producing a very pretty effect in floors of hotel corridors, offices, &c.

CORK-STONE.

This is a new material, the first patent being secured in 1880. Improvements have since been made and secured by patent as late as 1883. This material is now being extensively used in Germany and Belgium in connection with the construction of factory buildings. It is a non-conductor of heat, cold, and sound.

The following statements will exhibit its characteristics and some of the advantages claimed as resulting from its use:

The base of this material consists of pieces of waste cork, such as, in many trades, are thrown out unfit for use. These pieces, cut down to about the size of a pea, are mixed with a cement, consisting of mortar and clay, until each single particle is thoroughly coated with the cement, after which they are pressed into the proper shape and dried. From this manipulation results a porous body, resembling in appearance the so-called Rhenish alluvial stone, but of much less specific weight, that of the cork brick amounting at most to 0.30 or 0.35.

Many will be the uses to which cork bricks may be applied in architecture, inasmuch as they are based on the various properties possessed by the new material, and which are as follows: Very little weight; capable of being made up into certain shapes, thicknesses, &c., within a maximum limit; possibility of sawing the material and fastening it with nails; easy adherence of mortar and plaster; great efficacy as a thermo-insulator; and comparative incombustibility.

A brick of the ordinary dimensions weighs 600 grams=1 pound, 5 ounces, 2 drams; hence its specific weight is 0.3. It is as bad a conductor of heat as cork. It resists the temperature up to 356° Fahrenheit, and does not rot. Average strength of compression; 2.8 kilograms=6 pounds 2 ounces 11 drams per square centimeter (=0.15 square inch).

It is well known that, in the case of sheds and one-story buildings of large extension, the great desideratum is to obtain an isolating lining capable of preventing speedy refrigeration by night, as well as excessive heating power by day. Hitherto

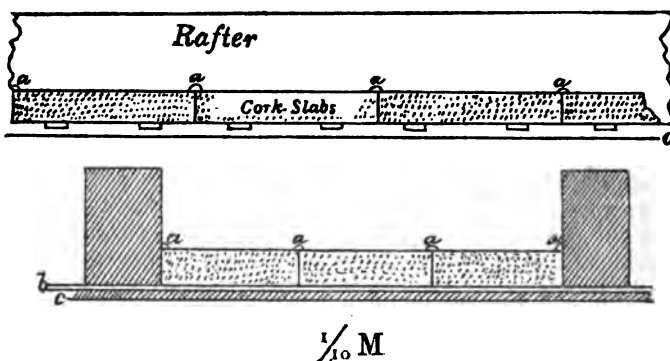
thick linings of clay and straw, or sawdust and lime, were usually applied to this purpose, which, however, answered but imperfectly, inasmuch as the inherent isolating capacity of such material is insufficient, and it has the additional disadvantage of being heavy and made dangerous by snow-falls in winter; and further, owing to the necessity of these mixtures being applied in a wet state, they often cause the timber work to rot, and if they are at all expected to dry, they can only be laid on in hot weather.

Cork-stone being a non-conductor of heat, the radiation of the latter is reduced to a minimum; and the weight required is so insignificant that it need not be taken into consideration. As the material is supplied in slabs ready dried, and of the precise width of the rafters, the roofing may be put on at any time of the year without any harm accruing to the timber work.

This material is comparatively incombustible, and may be laid on over the lightest laths without their requiring any further covering, and the ceiling adheres to the slabs direct without need of laths. Hence it is considerably cheaper than any other system of roofing.

It is easy to manipulate, and may be applied either previous or subsequent to the covering of the roof. Moreover, the cost of the entire isolating operation is greatly diminished by doing away with the use of *laths and reeds*.

DIAGRAM SHOWING METHOD OF APPLICATION.



Plasterers' laths nailed underneath the rafters at intervals of 125 millimeters (≈ 4.91 inch); cork-slabs laid on these in such a manner as to allow of the joints remaining free between each two laths (b); cementing (a) the joints with gypsum (plaster) from above; underneath the laths simple plaster ceiling, 20^{mm} (≈ 0.78 inch) in thickness (c).

DETAILS OF A WOOLEN MILL.

The business is that of manufacturing Italian and fine woolen cloths and worsted yarn, and is conducted in different mill buildings as follows:

Mill buildings.	Area of land.	Cost value of land.	Cost of land per square foot.	Cost value of buildings upon land.
	<i>Square feet.</i>		<i>Cents.</i>	
Cloth-mill	258,200	\$9,520 00	3½	\$125,520
Worsted yarn mill	155,520	7,228 06	4½	57,120
Average for two mills	414,720	16,748 06	4	185,640

The floor surface in cloth-mill is 187,000 square feet, and taking the cost of building as the basis of estimate, the cost per square foot was 68½ cents. In like manner, the floor surface in worsted yarn mill is 60,750 square feet and cost 94 cents a square foot. The average cost for the two buildings was 81½ cents a square foot.

MACHINERY.

The machines in use are: 1 Leviathan wool-washing machine; 6 kettles for dyeing wool; 7 kettles for dyeing cloth in the piece (*farbkessel für stoffe*); 2 kettles for dye-

ing wool combings (*farbkessel für kammsug*); 3 tubs for blue dyeing (*blau küssen*); 4 shearing and sizing machines (*ketten-sheer und leim maschinen*); 9 gig machines (*rauh-maschinen*); 13 rinsing or cleansing machines (*spül maschinen*); 5 fulling and various decatier machines (*walken diverse decatiers maschinen*); 11 longitudinal shearing machines (*longitudinales sheer maschinen*); 6 transversal shearing machines (*cross shearing*); 6 drying machines, combing, drawing, pressing, twisting, and other modern self-acting machinery usual in a first-class mill.

CARDING-MACHINERY.

In cloth mill there are fifteen sets of carding-machinery, and in worsted yarn mill twelve of Klein's improved carding-machines, with one main cylinder to each. Of the sets the larger portion contains three machines of one main cylinder each. The remainder are double-cylinder machines.

The larger part of the carding-machines are 1,250 meters (4 feet 1 inch) in width, and the older machines are 1,100 meters (3 feet 7 inches) wide.

In cloth mill there are 2 mules and 11 self-acting jacks, and 2 twist machines. In worsted yarn mill, 20 self-acting jacks—33 in all, and 8 twist frames.

In cloth mill there are 4,140 spindles, and in worsted yarn mill 12,000—16,140 in all; and 1,600 twist spindles. There are 280 power looms, and 20 hand looms; the number of harnesses used on each depends upon the article being made. The width of harness varies from 1.9 to 2.3 meters.

The present value (cost price) of machinery, including boilers, engines, shafting, tools, &c., is, in cloth mill, \$249,900, and in worsted yarn mill, \$108,290, a total of \$358,190.

The cost of a single set of carding-machines, such as is used in this mill, varies from 10,000 marks (\$2,380) for a set of 3 single main cylinder machines to 28,000 marks (\$6,664) for a set of double main cylinder machines.

We have recently replaced other carding-machines with "Klein's improved carding engines." With these machines a picker is not necessary, and the full natural length of the fiber of the wool is preserved; the wool is much more thoroughly and evenly carded, and a finer and stronger yarn is produced, with, of course, a finer and better quality of cloth. The feed apparatus frees the wool from substantially all foreign substances without waste of fiber, and, after careful tests, we regard the saving in raw material alone to be from 3 to 6 per cent. For certain purposes these engines have very great advantages over others.

The cost of looms varies from 650 to 1,500 marks each (\$155 to \$357.)

Both steam and water power are used in the mill, with a combined horse-power of 530.

Coal, delivered at the factory, costs \$1.47 (6.20 marks) per 1,000 kilograms, or 2,200 pounds.

TAXES, INSURANCE, ETC.

The taxes annually paid on lands, buildings, machinery, and power, are 1,200 reich-marks, or \$285.60.

The annual cost for insurance against fire is 8,600 marks (\$2,046.80), and 10 per cent. is allowed for depreciation of plant, on cost of mill and machinery, including interest on same.

From 8 to 10 per cent., including interest on working or active capital (*betriebs capital*), is regarded as a satisfactory return on the capital invested.

PRODUCT.

The average weekly production is about 5,500 meters (5,978½ yards) of fine woolen cloth, of an average market value at mill of 8 marks a meter, or \$1.90 a yard; 4,500 meters (4,892 yards) of Italian cloth, of an average value at mill of 1.75 marks a meter, or 42 cents a yard; 12,600 pounds of wasted yarn, one-half of which is sold as yarn and the balance is made into cloth, of an average market value at mill of 3.50 marks (\$1.83) a pound. Total value of weekly product, 96,975 marks, or \$22,842.05; or a yearly product worth \$1,187,786.60.

LABOR.

The wages paid in a week amount to 9,800 marks (\$2,332.40), and in a year, \$121,284.80. The number of persons employed, exclusive of administration, is 750.

The established time of labor ranges from 69 to 72 hours a week; and the weekly pay-roll amounts to 9,800 marks, as just stated. The weekly rate of wages paid in different departments of labor is as follows:

Average rate of wages paid per week.

Departments of labor.	Men.	Women.	Children.
Wool sorting:			
Overseer	\$5 95		
Sorters	3 80		
Wool-carding:			
Overseer	10 71		
Second hand	4 76		
Card-grinders	3 33	\$3 33	
Common hands	2 86	2 86	\$1 90
Spinning:			
Overseer	5 95		
Mule "fixers"	3 80		
Spinners	3 80		
Common hands	2 86	2 86	1 67
Weaving:			
Overseer	10 71		
Section hand	4 76		
Weavers	3 56	3 33	
Finishing:			
Overseer	14 28		
Second hand	5 95		
Scourers and fullers	3 57		
Shearers	2 86	2 86	1 67
Pressers	2 86		
Wool and cloth dyers:			
Overseer	14 28		
Second hand	4 76		
Common hands	2 86		
Repair hands:			
Overseer	9 52		
Machinist	5 24		
Carpenter	3 57		
Firemen	3 09		
Watchmen	2 86		

RAW MATERIAL USED AND ITS COST.

Perfectly dry and clean washed fine German, Australian, and Buenos Ayres wools (the last in limited quantities) are used, of an average cost price, delivered at the mill, of 2.75 marks (65½ cents) a German pound, or 1.055 pounds English. The finer portions are selected for the highest qualities of cloth made from uncombed wool, and the longer, coarser, and inferior portions are converted into worsted yarn. The skilled manufacturer who may desire to make comparisons will, with this explanation, understand why I am able to quote the market value of worsted yarn, at my mill, at 3.50 marks (83½ cents) per pound, made from wool costing an average price of 2.75 marks (65½ cents) per pound.

It is difficult to state the shrinkage or waste involved in the manufacture with accurate figures, because, although starting with cleanly washed wool, that coming from different countries gives widely varying results in respect to waste in carding, combing, and spinning. Even in the "waste" produced there is a difference in the quality and value. In my mill, and with the machinery in use in it, 100 kilograms of cleanly washed wool gives from 75 to 88 per cent. of combed wool, and from 12 to 25 per cent. of short wool or combings, and from 1 to 1½ per cent. of absolute waste. In spinning, from 100 kilograms of combed wool I obtain from 94 to 97 per cent. of perfect yarn, the shrinkage and waste in process of spinning, twisting, &c., amounting to not more than 4 to 6 per cent.

Wool is admitted free of duty. The usual credit given to purchasers of the manufacturers of this mill is three months. Entirely responsible manufacturers in this country may borrow capital at 4 per cent. annual interest. The average amount of working capital (*betriebs capital*) used in the management of this mill is about 2,000,000 marks (\$475,000).

COST OF LIVING AMONG MILL OPERATIVES.

The following statement of W. T., assistant overseer in carding-room, relating to his living expenses, will fairly represent those of other employés in this mill. In reply to questions he said:

My family consists of four persons, myself, wife, and two children, six and eight years of age. I receive as wages 18 marks (\$4.28) per week of seventy-two hours. We live in two rooms, and I pay--

For rent	per week	\$0 38
For government and church taxes	do.....	07

The following articles of food constitute our average diet during the year :

For breakfast—coffee, bread and butter, costs	per week	47½
For lunch at 10 o'clock—bread and butter, and sometimes a little meat .do.....	do.....	47½
For dinner—soup, potatoes, or other vegetables, and occasionally meat .do.....	1 66	
For lunch at 4 o'clock—coffee, bread and butter	do.....	47½
For supper, 8 o'clock—milk, soup, with bread	do.....	47½
Average cost for food and taxes for four persons	do.....	4 01
Personal luxuries for myself (beer, &c.)	do.....	26
Total.....		4 27

Average cost per week for food for four persons	3 57
Average cost per week per person for food	89

The earnings of the wife are sufficient in this case to cover cost of clothing for the family. Savings are not possible until the children are old enough to become helpers.

The food supply of mill operatives is drawn from the following articles, the market price of which at this date is as follows :

	Centa.
Burnt coffee, in the berry	per pound.. 33
Black bread	do..... 2
White bread	do..... 5
Butter	do..... 31
Milk	per quart.. 4½
Potatoes (for 105 pounds, 76 cents)	per pound.. ½
Cow beef	do..... 14
Salt pork	do..... 18

Common hands in mill receive 12 marks, or \$2.86, per week. Weavers who work on hand-loom in the mill are paid about 10 marks, or \$2.38, per week. The elements that enter into their living expenses are, therefore, of a lower grade than those that are provided for the family of the assistant overseer mentioned.

The wages paid in this mill are regarded by the community as being liberal.

RENTERS BECOMING PROPERTY-OWNERS.

It is worthy of note that the proprietor, when desired, provides a house and garden for workmen with families, charging for same a reasonable rent. If this rent is paid for a period of nineteen consecutive years by the same family the house becomes the absolute property of the occupant.

For instance, P. K., a hand-loom weaver in the mill, has a wife and six children, all living at home. He works seventy-hours per week, and earns 10.50 marks (\$2.50). He lives in a one-story house, 25 by 21, which has about 5,000 square feet of land connected with it for garden purposes. He pays as rent for these premises, including taxes, insurance, &c., 132 marks (\$43.50) per year. If he continues to pay this rent for nineteen consecutive years the property, by provision of contract, becomes absolutely his. If the premises are abandoned before the expiration of that period his accumulated rights in them are forfeited.

The advantages of this system to employer and employés are evident. The employer secures and retains good and skilled workmen, while the employé, through a kind of compulsory system of savings, secures a home for his old age. The garden is the chief factor in aiding the family to acquire such a home, as a large proportion of their food supply is drawn from it. But under the prevailing cheap rates of labor in this part of Germany, it would be very difficult for a family to profit by the advantages of such an arrangement until their children were old enough to receive wages, when the earnings of all could be united in accomplishing the desired results.

A SKILLED DYER'S STATEMENT.

As an example of the manner of living and of the exact uses which a factory operative, who lives in town and has no garden, makes of his wages, the following carefully prepared statement of H. W., a skilled dyer and a prudent man of good habits, is given below.

He has a wife and five children, the eldest nine years of age. His fixed pay per week is 18 marks (\$4.28), and the average weekly earnings of his wife are 5 marks (\$1.19), making their united weekly earnings \$5.47, or per year, for the man, \$222.50, and for the wife, \$61.80; united earnings for the year, \$284.44.

From the data contained in the following table a judgment can be formed as to the condition of living and life of a family containing the same or a smaller or greater number of persons, where the earnings are not half as much as those of H. W. and wife, above mentioned, as is the case with the hand loom-plain-velvet weavers around Crefeld.

The apparent excess of 57 cents per week of expenditures over regular earnings which the table exhibits was made good by the operative by working extra hours at night.

ACTUAL LIVING EXPENSES OF A MILL OPERATIVE.

Statement showing elements of cost in the actual living expenses of a mill operative with a family composed of two adults and five children.

Items of expense and cost.	Per week.	Per year.
<i>Miscellaneous.</i>		
Rent of rooms	\$0 69	\$35 88
Government and church taxes	08	1 56
Fuel	14	7 28
Petroleum, 3 quarts, at 4½ cents	14	7 28
Soap, 2 pounds, at 5 cents	10	5 20
Physicians' fees	06	3 12
<i>Food.</i>		
Wheat flour, 10 pounds, at 4½ cents	42½	22 10
Yeast	07	3 64
Baker, for baking bread	07	3 64
Black bread, 14 pounds, at 2 cents	28	14 56
Butter, 1 pound, at 24 cents	24	12 48
Coffee, burnt in the berry, ½ pounds, at 31 cents	23	11 96
Sugar, ½ pound, at 8 cents	04	2 08
Milk, 10 quarts, at 4 cents	40	20 80
Potatoes, 24 pounds, at ½ cents	19	9 88
Cow beef, 3 pounds, at 14 cents	42	21 84
Salt pork, 2 pounds, at 16½ cents	33	17 16
Lard, 1½ pounds, at 16½ cents	24½	12 87
Eggs, 14, at 1½ cents each	21	10 94
Vegetables—beans, peas, cabbage, &c	50	26 00
Beer, 8 pints, at 3 cents	24	12 48
Vinegar, salt, pepper, &c	12	6 24
<i>Clothing.</i>		
Shoes for man, 6 pairs wooden, at 20 cents, \$1. 20; and 2 pairs leather, at \$2.10 ..	10	5 40
1 pair house-shoes for wife	04	1 85
8 pairs working overhauls, at 50 cents	03	1 50
2 cotton shirts, at 75 cents	03	1 50
3 pairs drawers, at 50 cents	03	1 50
3 pairs socks, at 30 cents	02	1 08
1 pair fustian pants	08	1 50
Outer clothing for children	17	9 00
Shoes for 5 children	27	14 28
Cotton cloth for children's underclothing	05	2 50
Woolen yarn for stockings	05	2 90
Total	5 90½	313 00

Average cost per week for clothing for the family, 88 cents; for each person, 12½ cents. Average cost per week for food alone, \$4.01. Average cost per week per person for food, 57 cents.

J. S. POTTER,
Consul.

UNITED STATES CONSULATE,
Crefeld, June 15, 1885.

LABOR-*SAVING* MACHINERY AND THE FUTURE MANUFACTURE OF SILK GOODS IN EUROPE AND AMERICA.**REPORT BY CONSUL POTTER.***SILK AND COTTON IN COMBINATION.**

The great specialty in the textile industries of Crefeld is the manufacture of goods with silk and cotton in combination. This locality has long been without a rival in the production of this class of textiles, which are attractive, cheap, and always fashionable. The prolific output of the Crefeld manufacturers has been largely consumed in the United States, where, up to the present date, fancy silk goods and silk and cotton mixed stuffs have not been produced in colors, at least not to an extent worthy of particular mention. One reason, among others, for this fact is that they are mainly the product of expert hand-loom weaving, an output of the "house industry" which is so widely known in connection with the textile industries of this district.

COMPETITION.

It has been difficult for the American manufacturer to compete with the cheap hand labor of Europe in the production of silk goods, especially in the highly artistic and fancy varieties produced in combination with cotton. The reasons are obvious. Culture in art, aided and encouraged by the continental governments, and the accumulated knowledge resulting from centuries of experience which one generation has passed down to another, often embracing great communities whose knowledge and practice have been always confined to a single branch of some leading industry, have, of course, given the European an advantage which, up to this time, has not been overcome by American manufacturers.

But there are now reasons enough for the belief that the United States can, within a brief period, produce every variety of silk and silk and cotton mixed goods which the American markets demand, and with a degree of perfection equaling the best European manufactures, and at a cost which will place the home production beyond the fear of foreign competition. The inspiration which comes to the unfettered American mind has already produced machinery which, in the production of the plainer kinds of silk goods, has already "pushed to the wall" the cheap labor of the European artisan. As a result the foreign manufacturers, in order to keep a position in the American market, have been forced to resort to the introduction of machinery to take the place of hand labor, which, cheap as it is, cannot, at least not under existing tariff laws, compete with the American manufacturer in the production of certain kinds of silk goods, even in very high qualities.

* When Mr. Potter's report was received at the Department it was submitted to Mr. William C. Wyckoff, secretary of the Silk Association in this country, with a request that he should designate such machines mentioned in the report as would be useful to American manufacturers. Only such as he designated are printed.

THE FUTURE OF SILK MANUFACTURING IN EUROPE AND AMERICA.

Already in nearly all the silk-manufacturing centers of Europe power-looms have largely superseded the use of hand-looms, and now labor-saving machinery is being extensively introduced into dyeing and finishing establishments. The quality of power-loom or machine-made goods is for the time being inferior, and, of course, much cheaper than hand-loom production; but under the economical tendencies of the times they are acceptable, and, because cheaper, they have a wider and more general distribution than the higher cost productions of hand labor.

In the mean time the work of improving and perfecting machinery goes rapidly on in America and in Europe, and, through the instrumentality of machinery, the cost of production on both continents is progressing toward equality.

The explanation is this: There is no appreciable difference in the cost of machinery in Europe and that made in America. The cost of the power that moves the machine is as high in one country as in the other. The cost of the material that it converts into merchantable goods is substantially the same on both sides of the Atlantic. The only material difference in the cost of European goods produced by machinery and those manufactured by similar machinery in America is the difference in the cost of the labor of the man who manages the machine.

The conclusion naturally follows that if one man in Europe can, by machine manipulation, now turn out a product equal to that of the cheap hand labor of ten men, the advantages of the European manufacturer, so far as the cost of machine-made goods is concerned, is reduced to a minimum, and in the near future is likely to be wholly lost through the ingenious and more skillful creations of American mechanics. It would seem, therefore, that to whatever extent machinery in Europe takes the place of hand labor, to that extent is the cheap labor removed with which American manufacturers have heretofore been obliged to compete.

In the production of textiles hand labor seems to be destined to disappear at a period not remote. Then the quality of the articles produced will depend upon the ingenuity and mechanical skill that invents and constructs the machinery that makes the goods. It is therefore safe to predict that in a decade of years from this date the greatest variety and the finest qualities of silk goods produced in the world will be manufactured in the United States.

Manufacturers in Crefeld, as elsewhere at this time, appear to have energetically entered into the spirit of the "rage" for new labor-saving inventions, and their prevalent tendency is toward machine production in every branch of textile manufacturing.

This is not the place to comment on the probable effect upon the industrial classes of introducing so much labor-saving machinery into the overpopulated manufacturing districts of Europe, but the natural and known result following is, that a large number of artists and skilled workmen in silk manufacturing are now without occupation.

The present time would, therefore, seem to be a favorable opportunity for American silk manufacturers to transfer to the United States the centuries of European experience which is embraced in the knowledge of some of the best trained and most skilled artists and workmen now out of employment.

In the departments of dyeing and finishing silk goods, especially velvets, plushes, and fancy silk and cotton mixed goods, Europeans are yet far in advance of American manufacturers. It is with a view of

rendering some service to the latter in developing the industries connected with the silk manufactures in the United States that the data on the following pages relating to new and improved machinery, cost of dyeing, &c., has been collected.

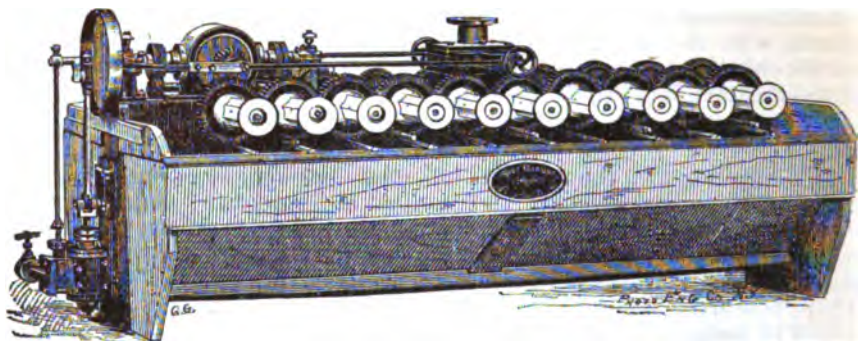
DEPRESSION IN TRADE.

In connection with the subject of labor-saving machinery some thoughts occur which would be inaptly elaborated in a report of this character, but the suggestion forced upon the mind is, that the capacity of existing machinery to supply manufactured articles greatly exceeds the demands of the markets of the leading civilized countries of the world. There is scarcely a machine-made article in general use that is not produced in quantities vastly beyond the purchasing power of consumers. As an illustration of the effects of this capacity for "overproduction," let it be assumed there is a present demand for certain kinds of textile goods. Capital invested in machinery for the production of such articles seeks a profit, and competing manufacturers become at once active in producing the desired goods. A "boom" in that branch of business follows. Prices and profits are satisfactory; the prospects are cheering; labor is in demand, and production is forced. Suddenly the demand ceases, and in a period of time surprisingly brief it is ascertained that the market is overloaded. Prices decline; the markets are stagnant; machinery stops; workmen are discharged or wages reduced; surplus goods are held or sold at a loss; capital is idle, the manufacturer and merchant despondent, and "trade is depressed," until the excess of production is consumed. Then follows another spasm of life in business, and another period of depression, and prices and profits gradually dwindle and fortunes are slowly made.

The effect of overproduction in nearly all manufacturing industries is fairly illustrated by the example cited. There has been "overproduction" even in steamships and railroads. The progress of science and mechanical creations has been more rapid than the natural movements and increase in the world's business necessities, and capital has been prematurely lured into investments which gave no return or was wholly lost. The construction of railroads which, though non-paying for the time being, open up to occupation undeveloped territory is not "overproduction," because the equivalent of costs is returned in many ways in benefits which come after; but the waste of capital invested in parallel lines not needed by the public, and over which legislation had control and could have prevented, has been a chief factor in producing business disasters and "trade depression." There can, however, be no control, and none, perhaps, is desired, over investments in the production of labor-saving machinery. The "era of unusual invention" must continue until what is understood as "hand labor" shall become extinct in all chief manufacturing industries. Then, perhaps, the legislator, manufacturer, and merchant will more carefully measure the needs for the world's consumption and produce accordingly.

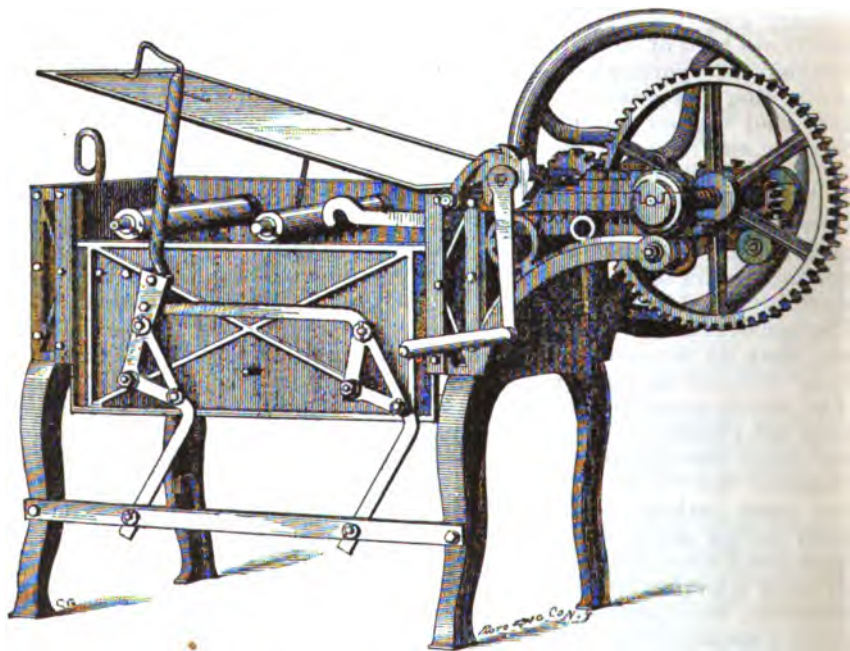
DYEING MACHINERY OF LATEST AND MOST APPROVED CONSTRUCTION USED IN OREFIELD AND VICINITY FOR DYEING SILK AND CHAPPE AND COTTON IN SKEINS OR HANKS.

Hank-washing machines (for silk, chappe, and colored cotton skeins).—This is a very useful apparatus, with improved porcelain rollers of best quality. These rollers are provided with a raised rim or flange, by which the skeins are kept in place.



Hank washing machine.

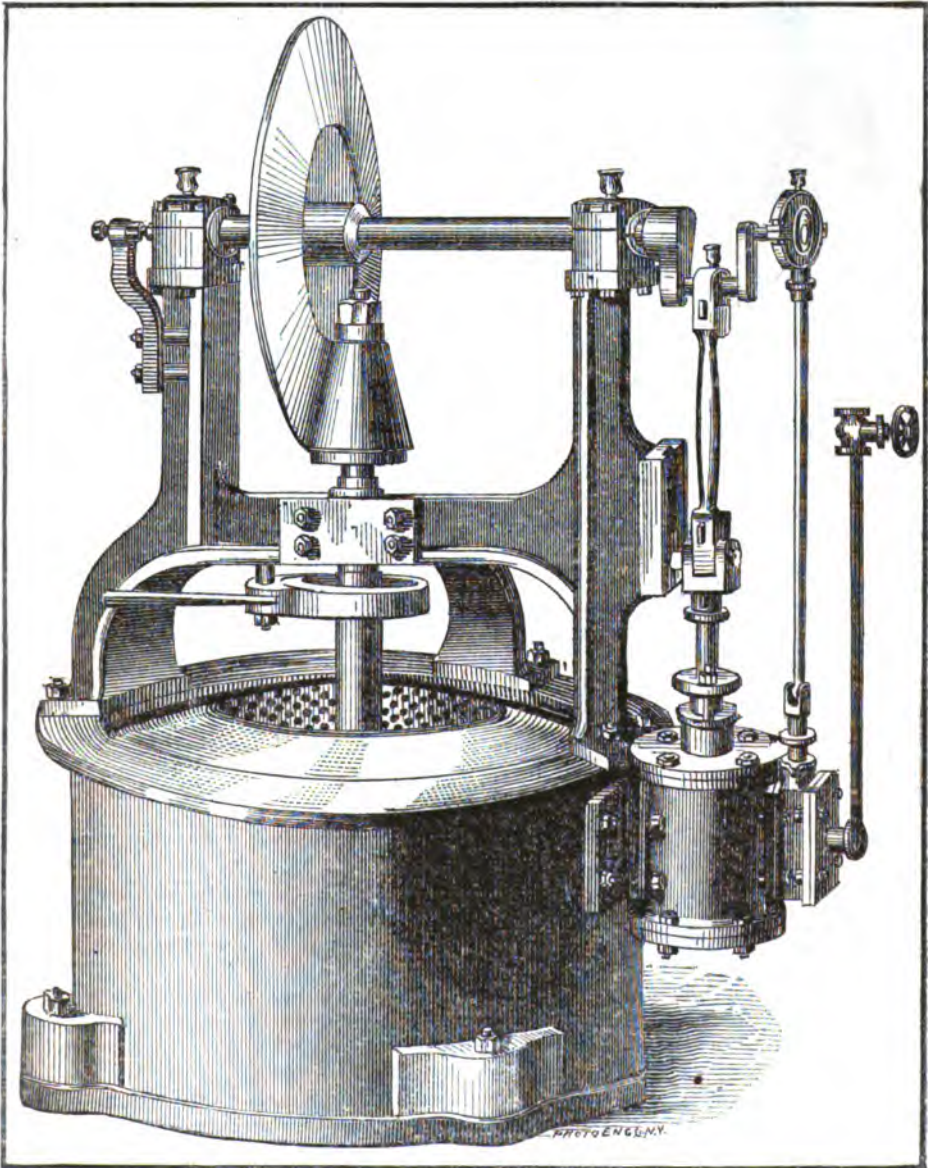
The machine is provided with separate water-pipes on each side and under the porcelain rollers, through which the water for washing the skeins is conducted. By this new washing arrangement the yarn is cleansed in a thoroughly satisfactory manner. The machine is at present in general use here. It can be manufactured large enough to wash 24 skeins at the same time.



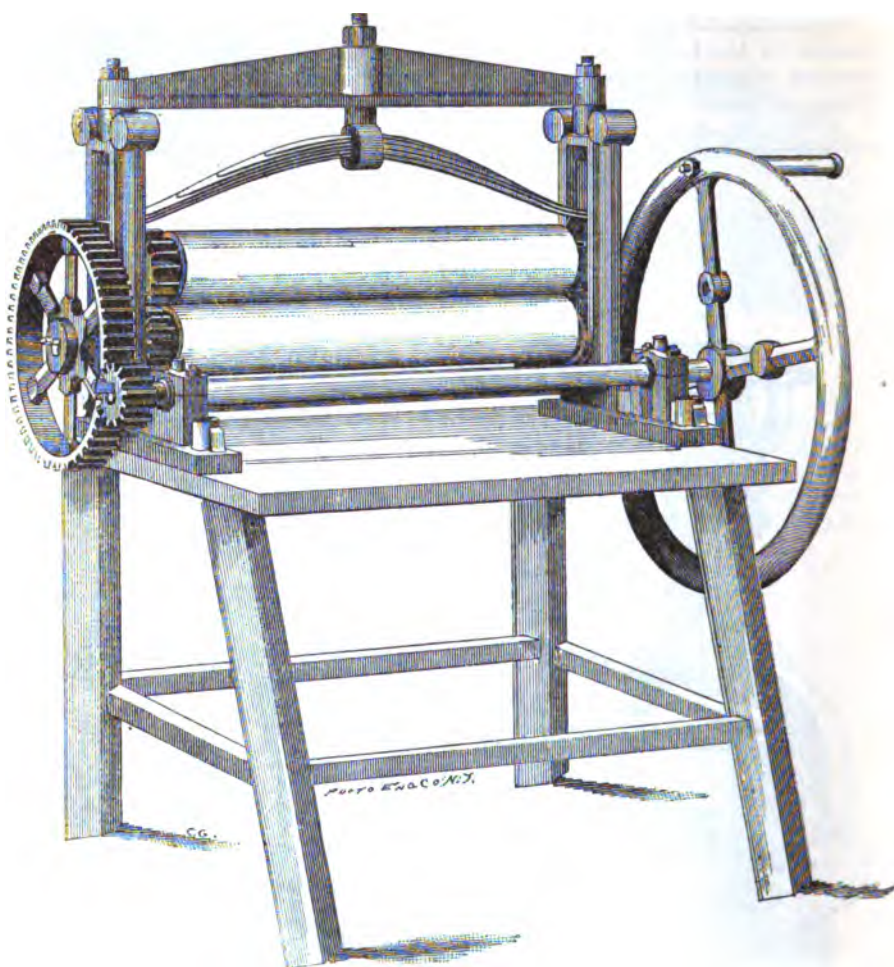
Lustering machine (steam chest).

Lustering-machine (steam-chest), with two steel or brass cylinders, and can be worked by hand or steam power. The cylinders upon which the hanks are arranged are hollow and heated with steam. They revolve slowly, drawing the hanks through the steam in the chest. This process gives the silk, chappe, and cotton skeins the desired luster. The machine is mainly used for lustering tram yarn.

Centrifugal drying-machine.—These machines are for silk, chappe, and cotton in the hank, arranged with a very heavy and strong copper extractor, which is protected by an extra strong wrought-iron outside case. They are made in dimensions ranging from 20 to 36 inches wide.



Centrifugal drying machine.



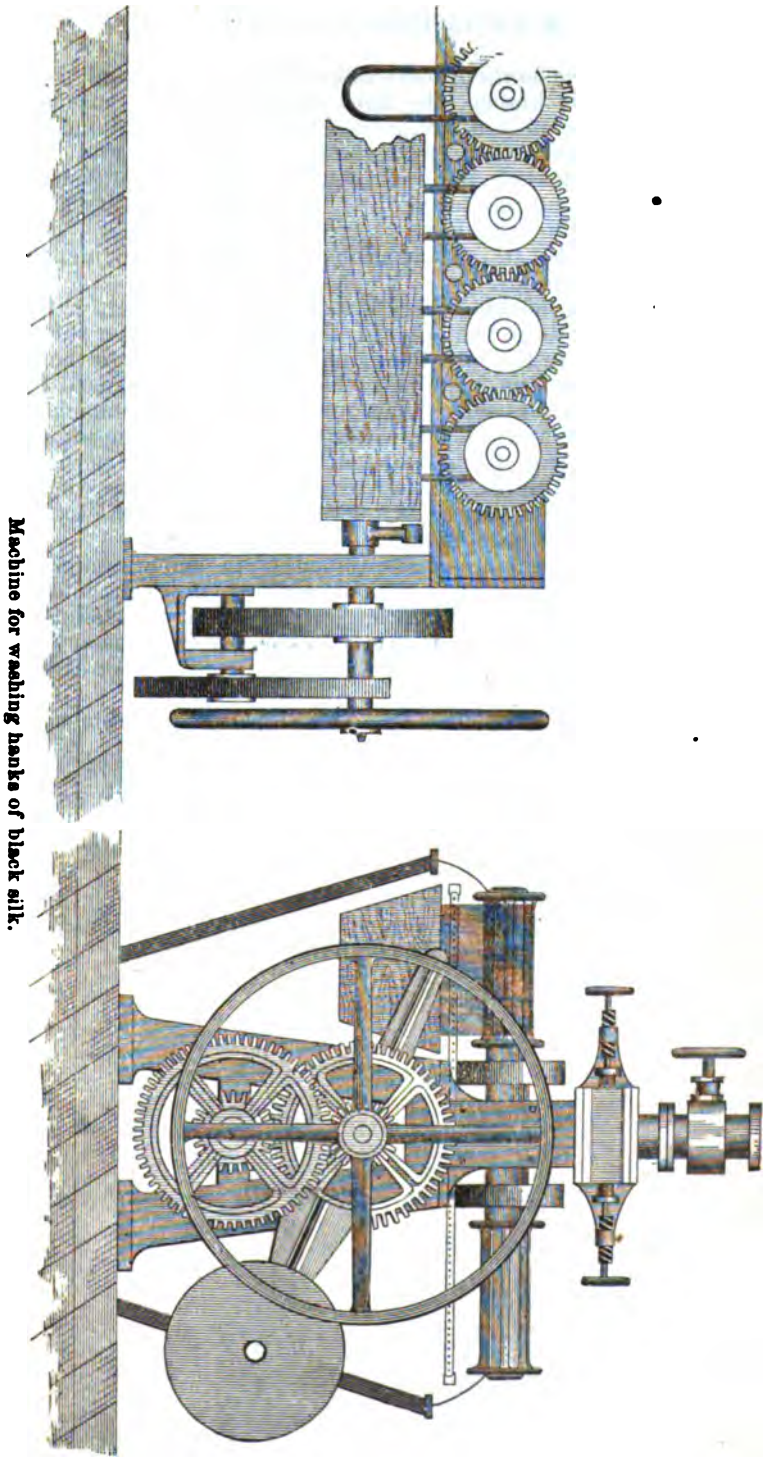
Iron wringing machine.

Iron liquor pressing or wringing machine, with two india-rubber rollers, or with one india-rubber and one lead roller, both with endless india-rubber apron, used for the purpose of conveying the skeins to the rollers.

The purpose of this machine is to wring or squeeze out of the yarn the iron liquor which it carries after receiving the bath. After this process the liquor is returned over the apron to the bath-tray. In this way the iron liquor is wholly saved.

The machine stands upon a wooden frame which rests upon four wheels, and is thus easily moved from one tray to another.

After the skeins have passed between the rollers they are deposited on a wooden frame and removed at convenience.



Machine for washing hanks of black silk.

Machine for washing hanks of black silk.—This is a new and patented improvement. As is known, the hanks, which have to pass several times through nitrate of iron, are, after each washing with cold water by the machine, to be taken off from the porcelain rollers and put into a tray filled with hot water heated to 40 or 50 degrees Réaumur, by which manipulation and rough handling the threads are very much injured, and also valuable time lost.

This difficulty has led to the invention of the machine now mentioned, which is arranged as follows:

Under the washing-machine there is a tray for hot water, which can be moved from one side to the other of the machine. After the hanks have been immersed in the nitrate of iron they are put on to the porcelain rollers of the washing-machine to be thoroughly cleansed by the use of cold water. After each washing on one side of the machine the cold water is shut off and the hot-water tray moved to the same side; and while the hanks are being washed in hot water for perhaps one and one-half to two minutes, another batch of yarn can be washed on the opposite side in cold water. After this performance the hanks are ready again for another immersion in the nitrate of iron.

It is suggested that the above-mentioned arrangement can easily be attached to any washing-machine that has separate pipes for cold water.

A machine of the above description can accomplish twice as much work as the washing-machines formerly in use, for the reason that the hanks need not be removed from the porcelain rollers after each cold-water washing.

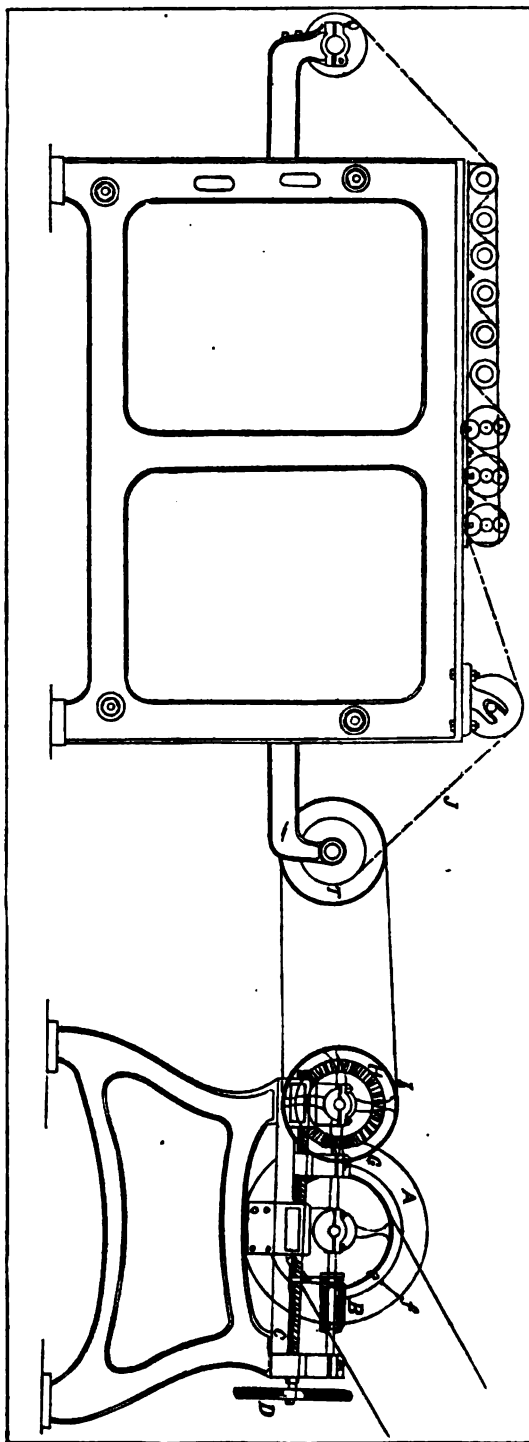
A trial of 8 months has shown that the wages of 4 workmen can be saved by the use of this apparatus.

In case the hot-water tray should not be needed it can be let down and covered.

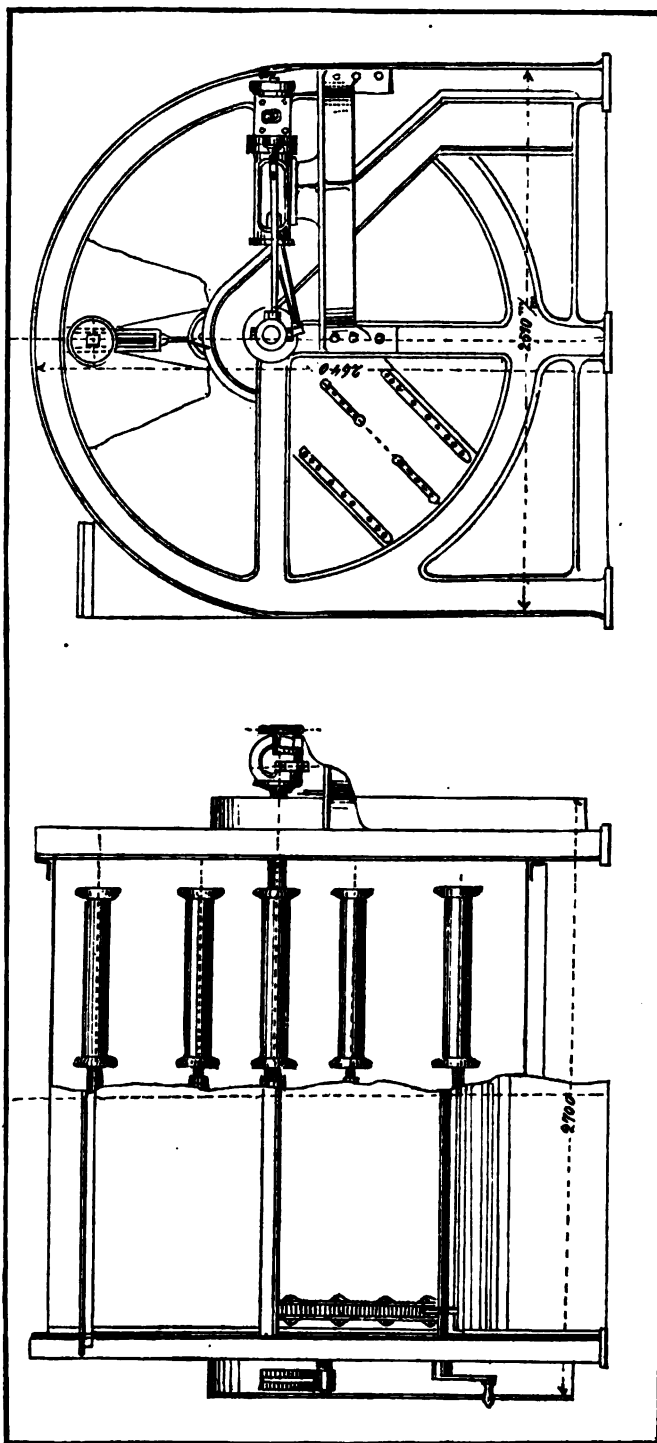
Machine for racking and rolling up goods dyed in the piece.—This is a useful machine recently invented and is used in every large dye-house in this vicinity.

By it the folds and creases and rumpled condition in which the goods are left in process of handling and dyeing are all taken out and put into rolls in a perfectly smooth and merchantable condition.

Machine for racking and rolling up goods dyed in the piece.



NEW METHOD OF RAPIDLY DRYING ALL KINDS OF YARN IN THE HANK.



Machine for drying yarn in the hank.

The drawing shows a front and side view of a new machine for rapidly drying dyed and other kinds of yarn by the cold-air process, after the water has been thrown out by a centrifugal cylinder.

In dyeing different kinds of yarn experience has proved that there are many colors and shades that are deadened or changed in various ways by being dried in heated rooms, and the dyer has never been certain that the desired shades he has produced will be preserved after they have passed through heated rooms or have been enveloped by hot air. Often great damage has resulted from this cause by reason of a failure to imitate with exactness sample colors.

To avoid a danger so serious this machine has been invented, which completely dries the yarn by the use of cold air only, or otherwise, as the case may demand. An idea of the construction and operation of the machine may be obtained from the following brief description :

In the middle of a strong iron shaft, supported by a suitable frame, are arranged ten projecting arms, like spokes in a wheel. To each of these are attached two pairs of porcelain rollers. The arms or large wheel is driven at a speed of one hundred revolutions in a minute, while the projecting porcelain rollers move independently at the rate of one revolution per minute only.

The machine is inclosed in a heavy sheet-iron case. On each side there is a close-fitting door, which is opened when the dyer puts on or takes from the porcelain rollers the hanks of yarn.

The rapid motion of the large wheel drives the damp air out of the case through a chimney on top, and thus creates a vacuum, which is supplied with fresh and dry cold air, which enters through an opening near the main shaft. The porcelain rollers are so arranged that in rotating around the shaft they have a slow but steady independent motion, revolving on their own axles, so that the yarn is constantly changing its position. A motor of one horse-power capacity is ample to drive one machine.

By the use of this apparatus cotton yarn, which is known to retain moisture for a long time, is perfectly dried in ten minutes.

The capacity of one machine with twenty pairs of rollers is equal to drying easily 1,000 English pounds of cotton yarn per day of ten hours. Where it is desirable one man can readily manage two machines, and thus dry with cold air 2,000 pounds of cotton yarn per day. Two machines can be conveniently operated in a room 16 feet long by 10 feet wide.

There are arrangements connected with the apparatus for heating the air before it enters the case. This process increases, of course, the drying capacity of the machine. Hot air is, however, only used with such colors upon the yarn as are not injured, or which are benefited by the presence of heat in the process of drying.

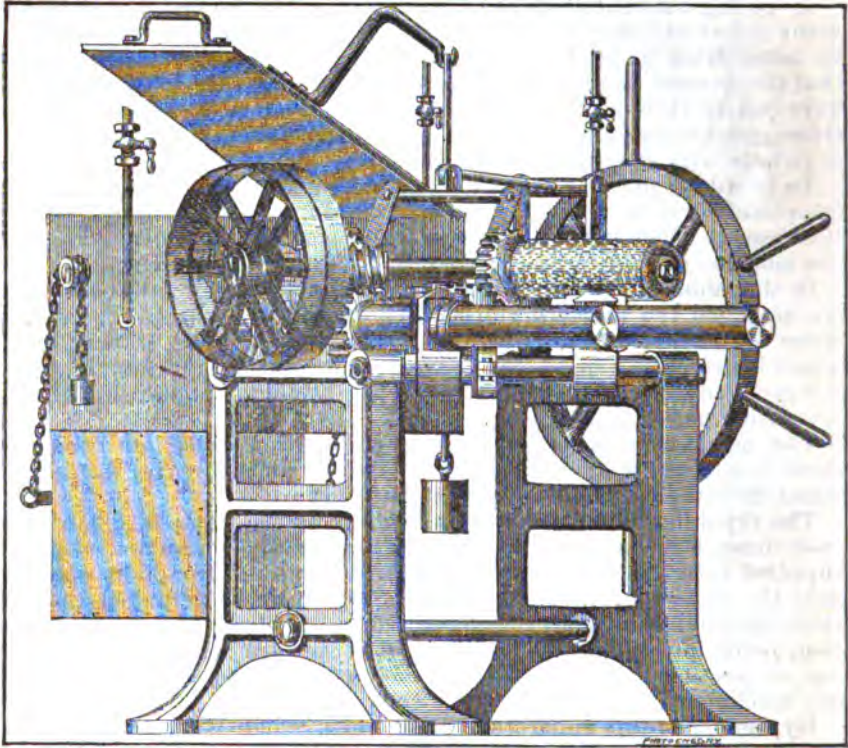
The machine costs from \$700 to \$800, according to size and capacity.

The advantages claimed for this apparatus are as follow : The danger of changing shades of color in process of drying is removed, and the dyer is sure of desired results; it is equally well adapted to drying all kinds of yarn; economy in time, labor, cost of fuel, and power; a great saving in the use of room and floor surface; and danger from fire is wholly removed, as cold air is used; but, if desired, the machine can be conveniently inclosed in a small fire-proof apartment in which its work can be entirely finished.

Machine for lustring and brushing chappe, silk, and cotton in the hank.—

This machine is provided on each side with two copper cylinders, heated by steam, over which a revolving brush is arranged, which moves rapidly in the same direction as the slowly-revolving skeins. The pur-

pose of these brushes is to give the yarn a brilliant luster and to lay the loose fibers in a longitudinal and paralalled position close to the yarn. This machine is very successfully employed in cases where the yarn has been injured in process of dyeing or handling, or otherwise.

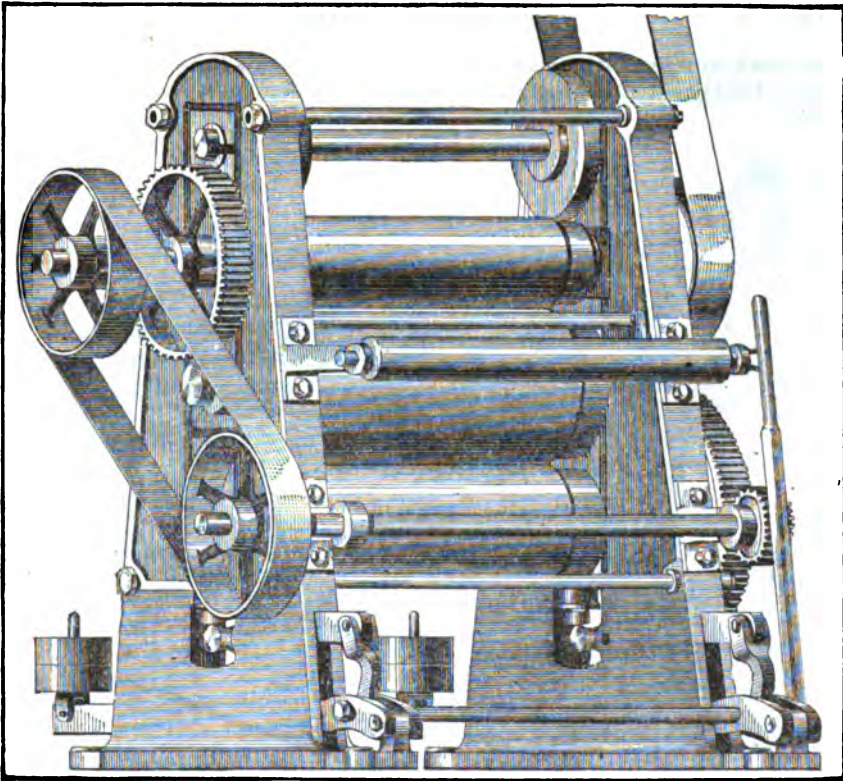


Machine for lustering and brushing chappe, silk, and cotton in the hank.

Oxidizing-machines (so called) are used in establishments for dyeing goods in the piece. The purpose of this apparatus is to press out the liquid dye-stuff after the goods have been immersed. This operation is performed by passing the goods between two india-rubber rollers. They are then, for the purpose of being perfectly dried, drawn over two and sometimes three cylinders heated by steam. This machine is now regarded by dyers as indispensable to good work.

FINISHING MACHINERY OF LATEST AND MOST APPROVED CONSTRUCTION USED IN CREFELD AND VICINITY FOR FINISHING SILK, HALF-SILK, VELVET, AND PLUSH GOODS OF ALL KINDS.

Friction and single calender machine.—This is a popular machine, having calender-rollers made any width up to two meters. There are three rollers, one above another. The upper and lower rollers are made of paper, and the middle roller is constructed of steel and heated with gas. This machine is now in successful operation in all finishing establishments, and is used for the purpose of producing a brilliant luster upon silk and silk and cotton mixed goods. It is generally constructed wide enough to manipulate two pieces of goods at one operation.



Friction and single-calender machine.

Hydraulic press for finished goods.—This machine is usually constructed with hollow-pressing-plates, one meter square, heated by steam, and is used for pressing silk and silk and cotton mixed goods after the pieces are finished and laid in folds, so that the numerous layers will retain their position, and the goods in the package appear firm, smooth, and attractive.

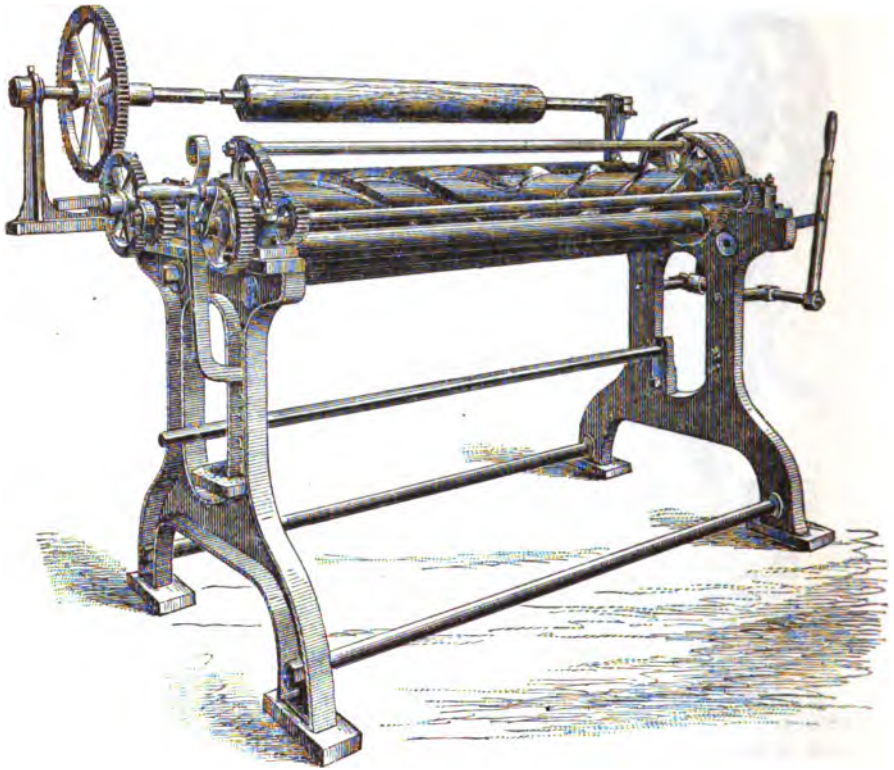
Breaking-machine.—All goods after being dyed and finished contain more or less of substances which make them somewhat stiff and harsh.

The purpose of this invention is to overcome those objections and give the goods a desired degree of pliability and softness, which will not only please the eye, but be agreeable to the touch when handled.

Another breaking-machine of different construction from the one above described, but intended to accomplish similar results in the treatment of velvet and plush goods, is in general use in finishing establishments. (Plate on page 311.)

Brushing and cleaning machine for velvet and plush goods.—Two brushes attached to a pivotal point in the middle of the machine are, by a cam arrangement, moved in a horizontal position from right to left with rapidity over the surface of the goods which are drawn under the brushes. After leaving these brushes the goods pass on under an endless belt-brush which is carried by rollers arranged on each side of the machine, and which moves at right angles to the motion of the goods.

The work now performed by this machine, which is very popular and in use in nearly all finishing establishments, was formerly done by hand labor.



Breaking machine (for silk goods.)

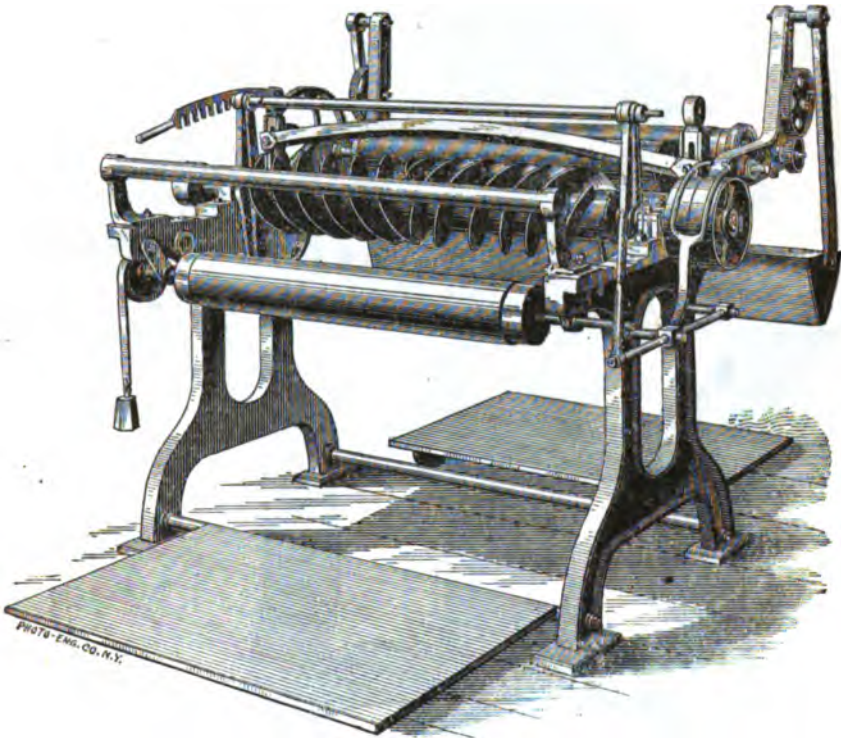
Caloric engine for cleaning and finishing velvet and plush goods.—The purpose of this machine is, by the use of a soft revolving belt-brush, to thoroughly clean velvet and plush goods and remove any particles of dust that may not have been taken out by the brushing-machine previously mentioned. After the goods have passed under the various brushes they continue on and are tightly drawn over a highly polished cylinder heated with steam, the back of the goods being, of course, next to the heated cylinder. The effect of this operation is to give to the back of the goods a glossy surface, and to the face, as a finishing process, a rich, full, smooth and soft appearance.

This invention is new, but it is now regarded as indispensable in first-class finishing establishments.

Friction apparatus.—This is a useful contrivance, and is designed to be attached to various kinds of machinery for the purpose of regulating the speed of the same. (Plate on page 312.)

Gas singeing-machine, with patent copper refrigerating cylinder, arranged with two gas-burning tubes, which have a very fine opening across each cylinder through which gas feeds the flame. This apparatus is used for the purpose of singeing both sides of dark colored half-silk and all-silk goods. It is an improvement on machines formerly in

use, and is highly spoken of by finishers of cravat stuffs and similar all-silk and half-silk goods, and is deemed indispensable in producing certain pleasing and popular effects. (Plate on page 314.)



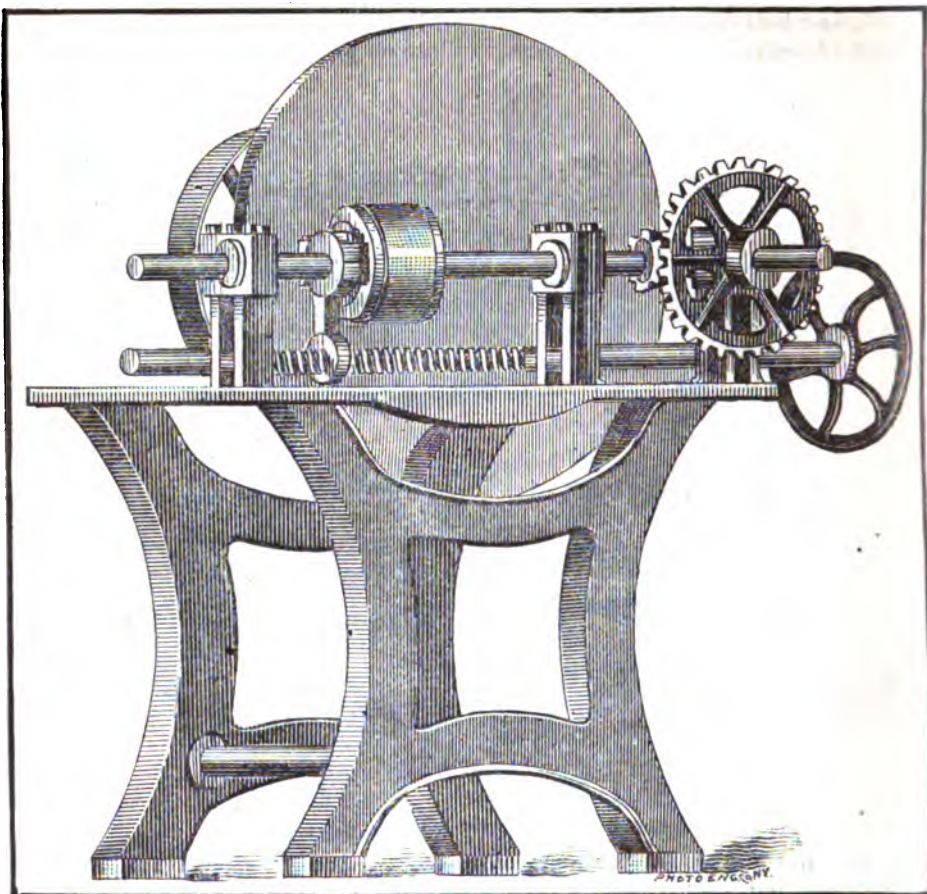
Breaking machine (velvet and plush goods).

Another gas singeing-machine (for velvet and plush goods) is used for the same purpose as that of the gas singeing-machine above described; the only difference is that this machine has no refrigerating cylinder, such not being needed for this kind of goods. The main purpose of the machine is to burn off all loose fibers on the *back* surface of velvet and plush goods. (Plate on page 313.)

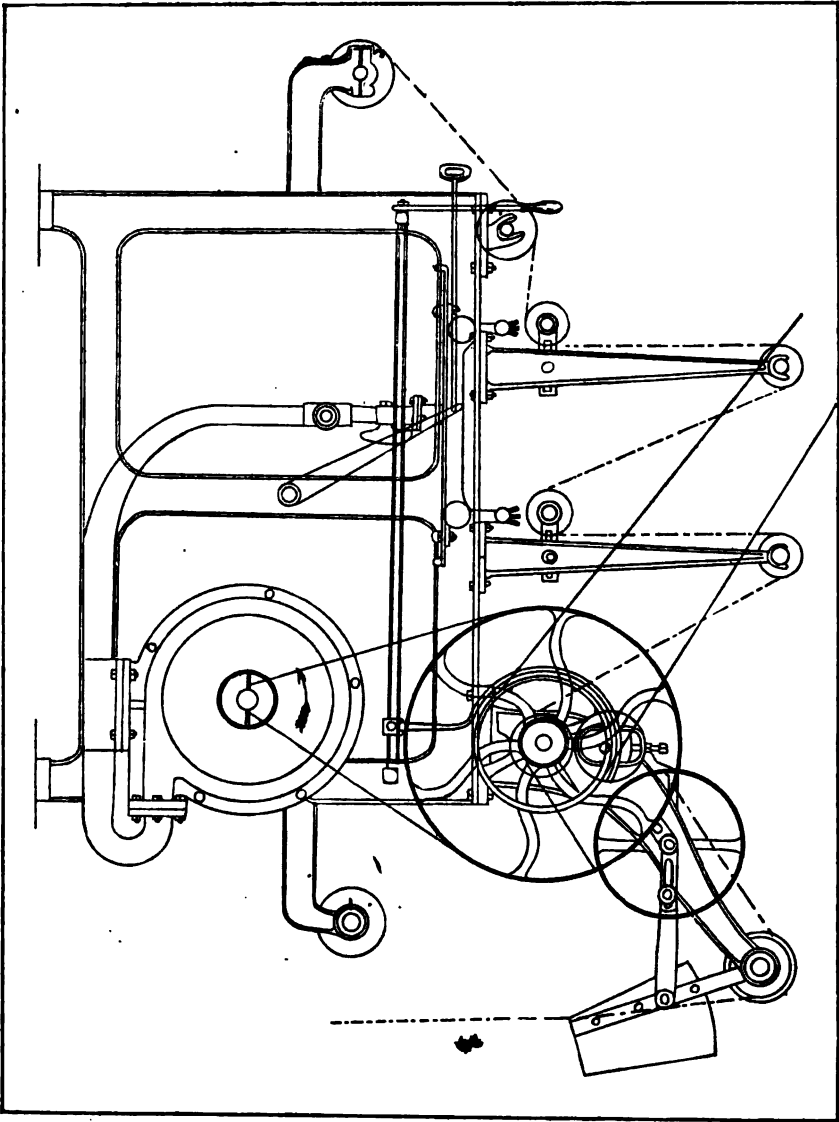
New shearing-machine (for velvet and plush goods, with patent self-acting apparatus for oiling the knives).—This machine marks a progressive step in the finishing department of velvet and plush goods. It is said to be a decided improvement on shearing-machines heretofore in use, and is protected by letters patent.

Two-cylinder shearing-machine.—This apparatus is used only for shearing light-colored silk and silk and cotton mixed goods, and is regarded as a very perfect and desirable machine for producing brilliant and fine effects on delicate shades of color. It is now used in place of the gas singeing-machine for dark colors, as previously mentioned. (Plate on page 314.)

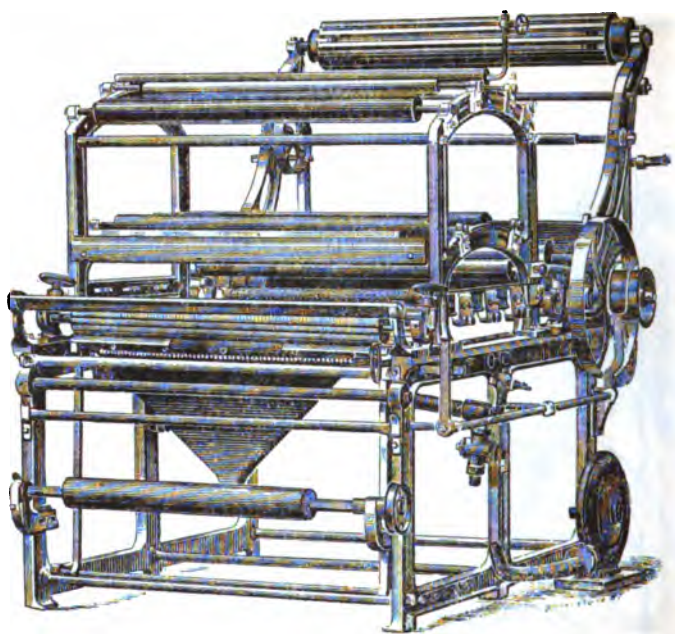
Rubbing-machine (for all-silk and half-silk and chappe goods, and especially for umbrella stuffs).—The purpose of this machine is, by a peculiar process of rubbing the back surface of the goods, to equalize the position of the threads in warp and filling, to make the goods smooth and soft and more compact by flattening or spreading the threads, and thus filling all the interstices in the fabric. (Plate on page 315.)



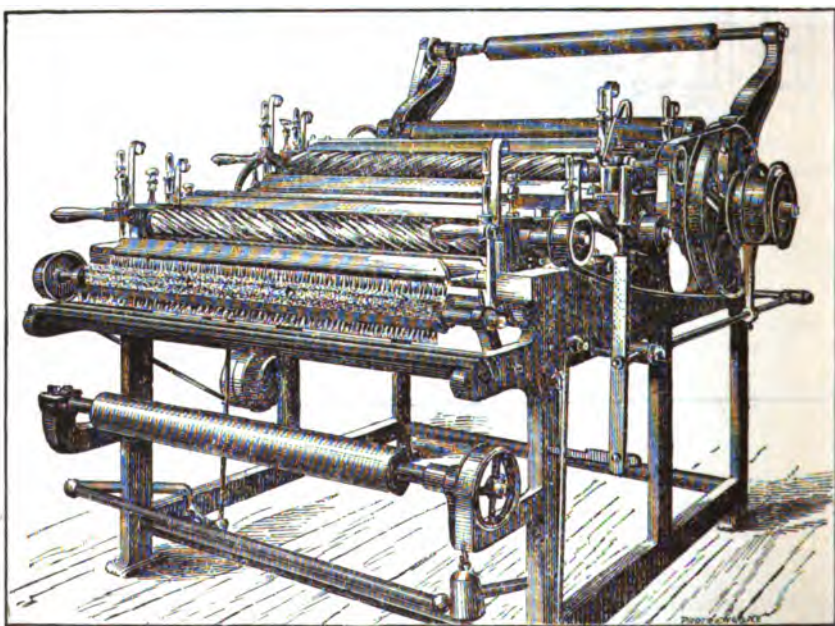
Friction apparatus.



Gas singeing-machine (velvet and plush goods.)

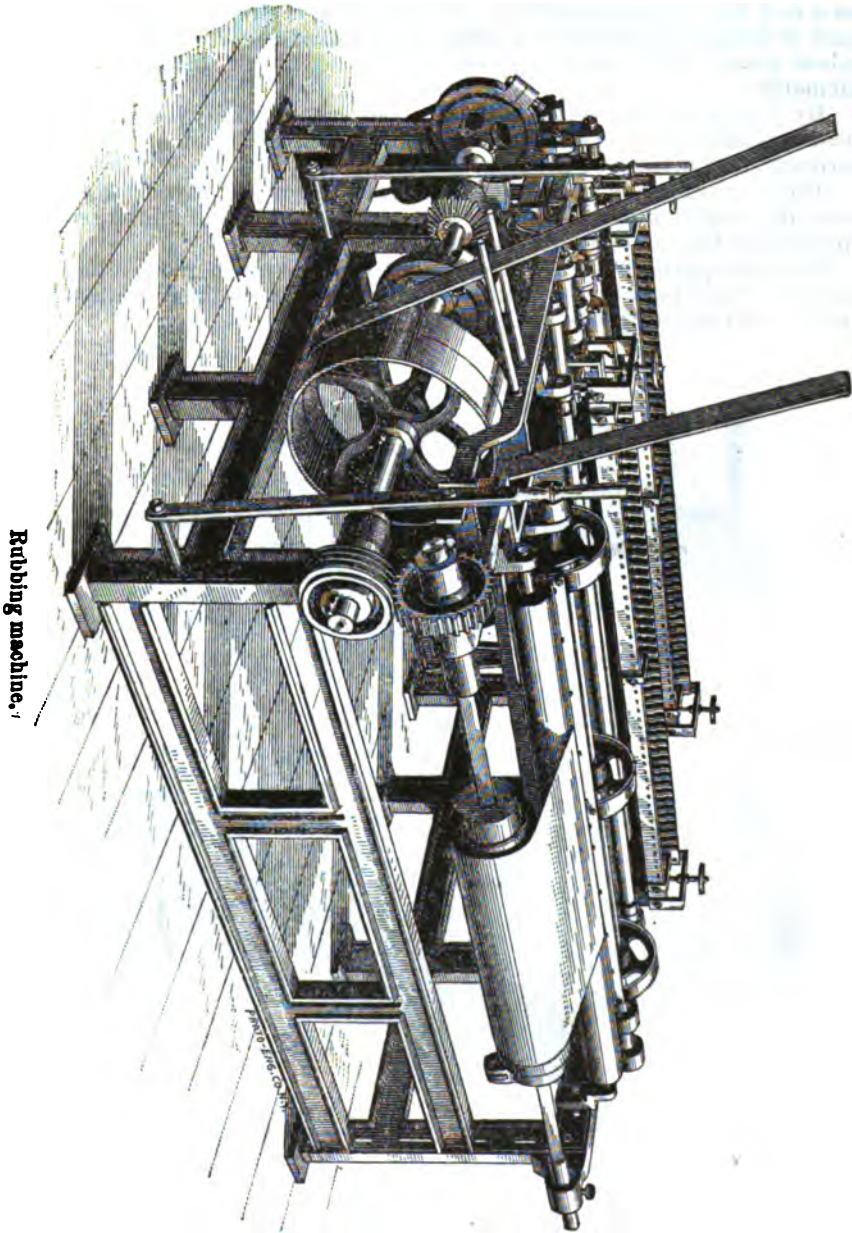


Gas singeing-machine.



. Two-cylinder shearing machine.

When it is desirable the face and back surface of the goods can be manipulated with equal facility.



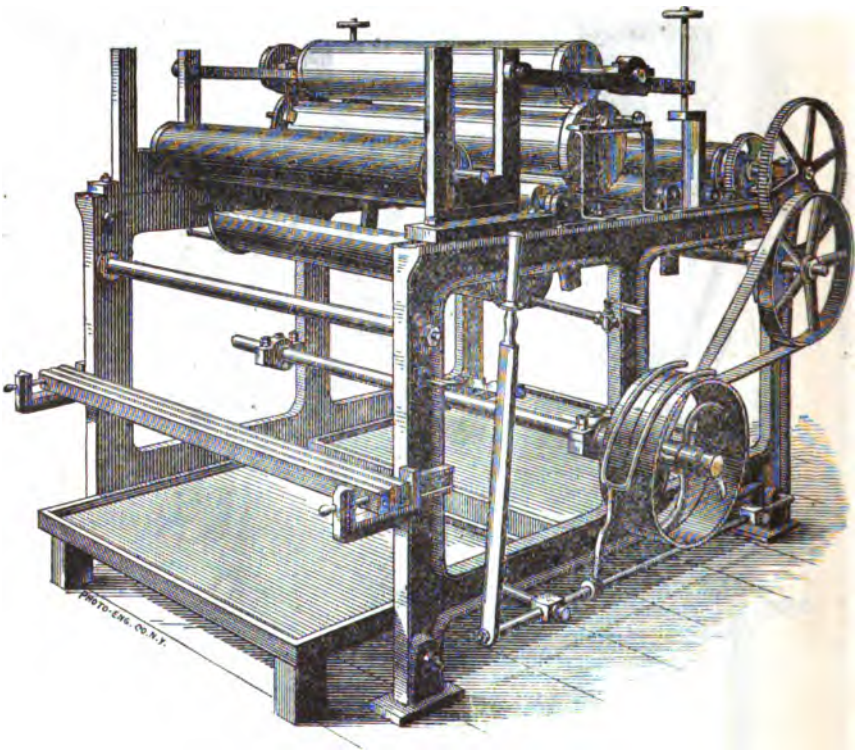
This machine is new, and is said to accomplish results greatly superior to anything heretofore produced. The work which it now satisfactorily performs with surprising rapidity has heretofore been done by hand labor.

New lustering-machine (for lustering plush goods in the piece).—This is a new and unique invention. The machine is simple in construction, and is designed to produce a close imitation of the celebrated “Lister plush goods,” which, at the present date, December 1, 1885, are in great demand.

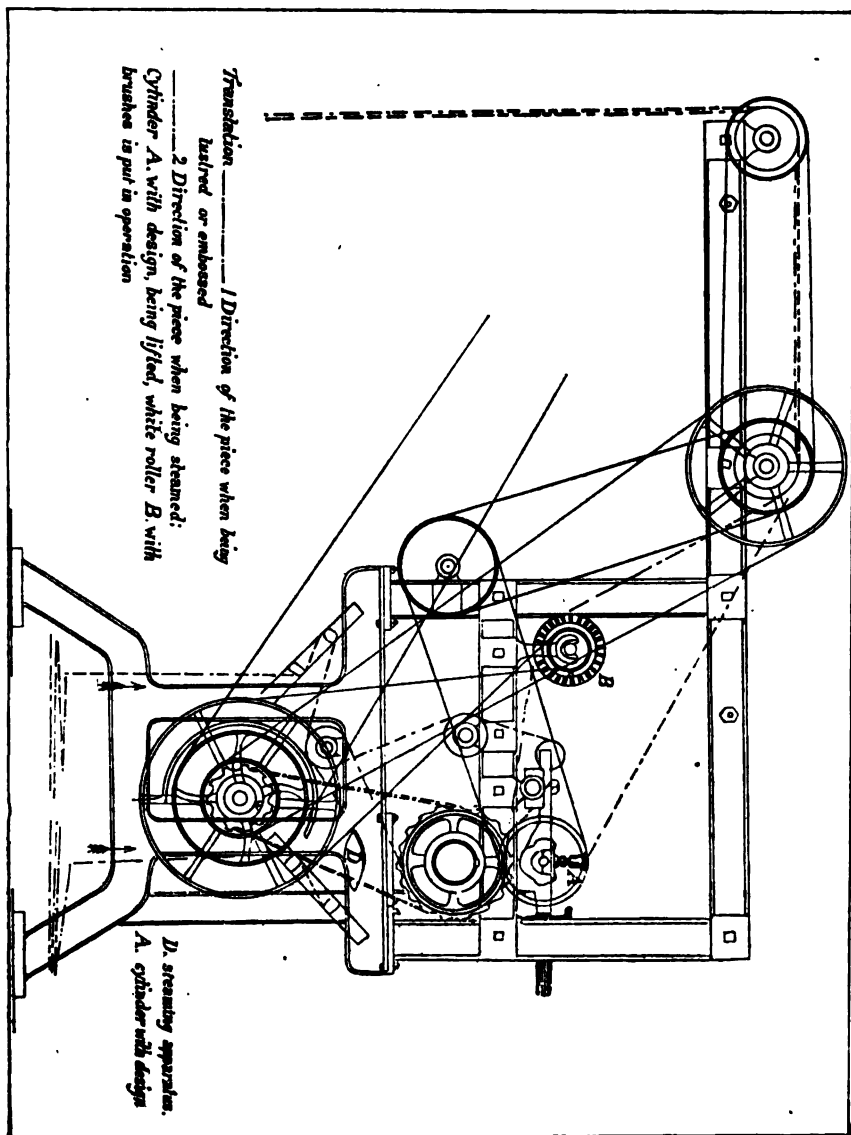
By the use of this invention plush goods can be wholly lustered or delicately embossed, and various designs in luster produced, securing very brilliant and attractive permanent effects.

The machine is regarded here as a very important invention, and is only in possession of a few firms, who use it in secret and under guarded protection from outside observation.

The main purpose of the invention is to give to plush goods a luster in design, or otherwise, more brilliant than has been obtained by any other system of lustering goods in the piece.



New lustering machine (plush goods).



Total average number of dyers employed in Crefeld during the years 1882, 1883, and 1884, the total number of pounds of material dyed, and total amount of wages paid during same period, and cost of labor per pound.

Items.	1882.	1883.	1884.
Average number of dyers employed.....	1, 648	1, 736	*1, 748
Total quantity of yarn dyed in the hank of—			
Silk..... pounds..	1, 644, 498	1, 361, 050	1, 325, 167
Chappe..... do..	1, 044, 545	1, 455, 992	1, 617, 839
Cotton..... do..	3, 531, 853	2, 504, 823	2, 768, 630
Total.....	6, 020, 896	5, 321, 871	5, 711, 636
Total annual amount of wages paid for dyeing :			
Silk.....	\$94, 518 37	\$90, 812 47	\$86, 007 49
Chappe.....	60, 035 74	97, 166 88	105, 002 51
Cotton.....	191, 500 04	167, 104 32	179, 692 14
Total.....	346, 054 15	355, 083 63	370, 702 14
Average cost of labor per pound.....cents..	5. 8	6. 7	6. 3

* Of this number, 350 are apprentices.

Cost of dyeing silk, chappe and cotton in the hank, and elements of cost in dyeing establishment No. 1.

Colors.	Cost per kilogram.	Elements of cost.			
		Labor.	Dyes, materials, chemicals, &c.	Interest on capital invested, taxes, insurance, depreciation, &c.	Total.
<i>Silk.</i>	<i>Cents.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
Ponceau.....	71	25	58½	16½	100
Myrthle and grenat.....	59	28	55½	16½	100
Marine and brown.....	59	28	55½	16½	100
Cream and mode.....	36	36	47½	16½	100
White.....	24	50	33½	16½	100
<i>Chappe.</i>					
Blue, green, and cardinal.....	59	29	58½	12½	100
Myrthle and grenat.....	48	35	52½	12½	100
Marine and brown.....	48	35	52½	12½	100
Cream and mode.....	36	50	37½	12½	100
White.....	24	70	17½	12½	100
<i>Cotton.</i>					
Blue, green, and cardinal.....	36	20	70	10	100
Myrthle and grenat.....	28	24	66	10	100
Marine and brown.....	28	24	66	10	100
Cream and mode.....	24	30	60	10	100
White.....	12	30	30	10	100
Black.....	11	38	44	18	100

Cost of dyeing silk in the hank, and elements of cost in dyeing establishment, No. 2.

Colors.	Cost per kilogram.	Elements of cost.			
		Labor.	Dyes, materials, chemicals, &c.	Interest on capital invested, taxes, insurance, depreciation, &c.	Total.
		<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
Black: pure, n. weighted.....	\$0 48	20	60	20	100
Weighted, 25 per cent.....	1 33	25	55	20	100
Weighted, 50 per cent.....	1 55	25	55	20	100
Weighted, 100 per cent.....	2 33	25	55	20	100
Weighted, 150 per cent.....	3 57	25	55	20	100
White and cream.....	24	20	60	20	100
Brown and grenat.....	59	20	60	20	100
Navy and sky.....	59	20	60	20	100
Cardinal.....	59	20	60	20	100
Green and myrthle.....	59	20	60	20	100
Ponceau.....	71	20	60	20	100

Cost of dyeing cotton yarn in the hank and elements of cost.

Colors.	Kilograms.	Elements of cost.			
		Labor.	Materials, dyes, chemicals, &c.	Interest on capital invested, taxes, insurance, depreciation, &c.	Total.
	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>	<i>Per cent.</i>
Black.....	14	35	59	16	100
White and mode.....	28	46	39	15	100
Brown.....	36	32	54	14	100
Yellow.....	48	45	45	12	100

Average wages paid per week to dyers in Creffield.

Occupation.	Men.	Women.	Young persons.
First master dyer.....	*\$8 57	.....	.....
Second master dyer.....	5 71	.....	.....
Expert workmen.....	5 00	.....	.....
Common workmen.....	4 28	.....	.....
Apprentices:			
First year.....			\$0 71
Second year.....			1 43
Third year.....			2 14
Packing girls.....		\$2 62	.....
Collector and deliverer of goods†.....	4 64	.....	.....
Teamster†.....	4 64	.....	.....
Fireman and engineer.....	4 28	.....	.....

* And one-fourth cent commission per pound.

† Uniform and shoes free.

Total average amount of wages paid per week to dyers in Crefeld; also average wages paid per week per person; also the number of pounds of material dyed per person per year, and the average yearly wages paid per person during the years 1882, 1883, and 1884.

Items.	1882.	1883.	1884.
Total wages per week	\$6,654 88	\$6,828 53	\$7,128 81
Average weekly wages per person	4 04	3 93	4 08
Average weight of silk, chappe, and cotton dyed per year, per person	3,653 45	3,065 59	3,267 52
Average yearly wages per person	209 98	204 54	211 90

It should be remembered by those interested in this subject that the cost of dyeing cotton which is to be mixed with silk in Crefeld, cannot be justly compared with the cost of dyeing similar material in great cotton manufacturing establishments. In Crefeld the cotton used is of the finest quality, much of it being of the sea-island grade, and requiring the most careful treatment and expensive dyeing materials.

The dyer is also obliged to handle very small quantities, and manipulate batches weighing from 1 pound to 100 pounds, very rarely having orders for one color exceeding 100 pounds, and the shades of color which he is obliged to imitate in order to harmonize with colors in the silk with which it is to be mixed are almost countless.

To dye 125 pounds of cotton a common black would not be regarded as a large average day's work. Some shades and qualities of black can be dyed in three or four hours, while other shades require four or five days and much careful attention and skillful treatment.

The largest average quantity of yarn that can be dyed by an expert and experienced dyer in Crefeld is as follows: 50 pounds of black cotton yarn; 20 pounds of colored cotton yarn; 10 pounds of silk and chappe.

Dyers are often required to divide one pound of silk into ten or twelve different colors, and to receive orders to dye one-half an ounce of silk is a common occurrence.

As a further illustration of the cost of dyeing fine cotton yarn black in Crefeld, the following statement is given, taken from the books of a first-class establishment for dyeing cotton yarn:

Quantity dyed in thirteen weeks (seventy-eight days).....	pounds..	59,000
Number of skilled dyers employed.....		17
Amount of wages paid per week.....		*\$4 28
Average amount dyed per day	pounds..	756
Average amount dyed per day per person.....	do.....	44½

From a preceding table it will be seen the lowest actual cost price, per pound, for dyeing cotton black in Crefeld is 4.9 cents, and from the above statement it will be observed that the cost per pound for labor for dyeing is shown to be 1.6 cents, and for packing, drying, and delivering, &c., .5 cent, making total cost of labor 2.1 cents per pound.

It should not be forgotten that, in Crefeld, the business of dyeing is an independent industry, and not connected with manufacturing establishments.

J. F. POTTER,
Consul.

* Or 71 cents per day.

REPORT ON AGRICULTURE IN GERMANY AND SUBJECTS CONNECTED THEREWITH.

Prussian system of farming; value of science in cultivating the soil; two small farms, 10 and 20 acres; an average first-class Prussian farm; description of farming by a scientific and practical farmer; questions and answers; crops raised; stubble beets; quantity and value per acre of certain crops; Prussian measure; cost of production; cost and analysis of cost of living; kind and quantity of food consumed.

Manure and fertilizers, how produced and used; eight-year rotation system in producing crops; the system illustrated; "Erdkohlrabi;" crops that are most profitable; hours of labor and wages.

Raising stock for food purposes; food and system of feeding cows; price and cost of milk; analysis of articles of food for stock.

Ensilage, of what made and how preserved; lupine; nitrogen from the air.

Cotton-seed as food for cattle; analysis of hulled and unhulled seed; interesting experiments with same.

Farm laborers in Prussia; yearly earnings; cost of living and elements of cost.

The production of milk for different purposes; best breeds of cows for milk producers; three breeds illustrated; "Aldenburg," "Cleveland," and "Holland" breeds; food and quantity to be fed; analysis of milk.

German and American farming tools; prospective market for American tools; modifications in structure suggested; German tools described.

Prussian agricultural schools.

General condition of agricultural industries in Germany; agrarian laws; German farmers' complaints; relief legislation demanded; tariff on food products to be increased; export duty on sugar; "schnapps monopoly" law; Government aid to farmers; improved methods of cultivating the soil, &c.

PRUSSIAN SYSTEM OF FARMING.

! With a view of presenting some information regarding the present average condition of German farmers, their system of cultivating the soil, of raising and feeding stock, and the results obtained from agricultural pursuits in Prussia, I have selected, as fair average illustrations, the management pursued by three grades of farmers, viz: The farmer with capital, the middle-class farmer, and the poor farmer who rents the soil he cultivates.

The information embraced in this report has been obtained by personal observation and direct interviews with farmers, and much of it is communicated in the precise answers given to interrogatories submitted to them, and with only such variations as were necessary to make them as clear as possible in translating them from the German into the English language.

The quality of the farming land of Prussia is divided into six grades, numbered from 1 to 4, the highest grade, or best quality, being No. 1, and the lowest quality No. 4. This standard has an official recognition throughout Prussia, and is a matter of record, so that the purchaser of a farm is able, by a glance at the records, to understand the quality and accurately measure the value of the land he buys. He is also able, before purchase, to determine as to what purposes it is best adapted in order to secure profitable results.

The value of science in farming.—It is not presumed that the advanced intellectual agriculturist in America will find much that he desires to copy from German methods of cultivating the soil, but the systematic frugality and economic ways of the German farmer present lessons that may be studied with advantage by American farmers generally, whose

facility for acquiring land has led them into extravagance, and even prodigality in the use of area to accomplish a desired result.

The information gathered from a small district must, of necessity, be comparatively meager, but from what is here presented some interesting comparisons can doubtless be made relating to the progress of science and improvement in systems of farming prevailing in the most intellectual portions of Europe and America.

Prussia is regarded as an overpopulated country, for the reason that there are more people living within its geographical limits than can be sustained by the products of the land occupied, every arable acre of which is cultivated. How to produce much upon a small area is, therefore, the German farmer's natural lesson. Necessity compels him to think. He is obliged to farm with his head as well as with his hands. His acres are few and expensive, and the number cannot be increased. His average general burden is that of a large family and heavy Government taxes, and he is thus forced to be a student and economist. So far as worldly possessions are concerned his hopes are limited by the boundaries of the land he owns, and in the pursuit of happiness his ambition leads him to make the most of that which he possesses. During recent years he has learned that chemistry is his great and best friend, and that, in fact, his farm and the air above it are a chemical laboratory in which, until recent dates, he has been working without knowing how to utilize the valuable forces with which nature has surrounded him. The imperial and royal Governments of Germany and Prussia now recognize the power and value of scientific knowledge in cultivating the soil and encourage, with generous aid, local associations in the establishment and maintenance in different parts of the country of agricultural and technical schools of a high order, where an education adapted to agricultural pursuits can be economically acquired. These institutions are yielding fruits which are in every way satisfactory and encouraging.

Small farms, when cultivated with intelligence, are shown to have produced the best average results. The smaller the farm the greater is the amount of care, study, and attention that can be bestowed upon it.

Two small farms.—I have carefully examined two farms situated side by side, one containing 10 and the other 20 acres. The families upon each farm were composed of three adult persons and four children, the latter being under twelve years of age. The owner of the 10-acre farm managed to secure from it a comfortable living for himself and family. The owner of the 20-acre farm, while working, apparently, much harder, and with double the investment in land, accomplished with less tidy and genteel accompaniments the same result. His labor was spread over an area of twenty acres, while the labor of his neighbor was concentrated upon half that surface. Both aimed to earn for themselves and their families what they termed a "moderate support," and each accomplished that and nothing more. The owner of the ten acres farmed with his head and hands, while his neighbor followed the ways of his father, and worked with his hands only. He had never investigated the ingredients of the soil he cultivated, nor the elements of the fertilizers he spread upon it, and had no faith in what he heard regarding the possibility of "saving tons of manure" by putting his land in such condition that it would draw from the air and clouds vital fertilizing elements and hold them as nourishment for the next growing crop.

It seems to me [he said] that only a crazy man can seriously expect manure to come down from the skies on to his land. My neighbor talks to me about such things, and tells me that some crops draw from the air more "stickstoff" (nitrogen) than others,

and that, in order to secure the full benefits of this "invisible manure," advises me to raise, upon the "rotation principle," certain crops here and others there, and to prepare the soil in this way and that. He says it is the natural way, and very easy, and that if I give nature a fair chance she will help me, and all that. But these school-house ways are to me very confusing. The old ways, which I understand, are the safest and best for me.

This plodding, hard-working man had no cultivated knowledge of the forces and elements of nature that surrounded him. His experience and tradition had taught him to expect certain familiar effects from work performed in a certain way, but he could not analyze the cause that produced the effect. He only knew that so and so was so and so; the *why* he had not learned. To depart from traditional usage was a leap in the dark, and to him a dangerous enterprise. He felt safe only when he moved in a rut. His understanding had not been enlightened with the truth that a knowledge of the practical sciences was absolutely essential to successful farming. He, like many others, entertained the idea that a man could become a farmer when his capacity for all other occupations had failed. And thus, for lack of the cultivated wisdom which his two boys, at a later day, will bring from the agricultural school, he will remain a drudge on his 20-acre farm until the vigor of manhood is gone. Then, when quietly summing up the gain of a long life of toil, the retrospect will bring to his view the record which will show that he was a faithful digger.

Ten acres.—The horse, two cows, and seven pigs, which were maintained on the 10-acre farm, were beautiful animals and in fine condition. The little farm house was in good repair, and the interior presented a picture of neatness and order, and the wife and children were in tidy apparel. While there was no evidence of unusual thrift to be seen, there was none of poverty, but everything in view seemed to be arranged with reference to saving and frugality. The floor of the cool milk-room in the basement story was as clean as smooth white tile could be. In one corner was a stone reservoir into which was flowing a constant stream of cool spring water with an outlet through a perpendicular pipe standing in the center. There were rolls of golden-colored butter and many cheese upon the hanging shelf, and rows of shining pans filled with milk were arranged upon a stone projection near the reservoir of the ever-changing water.

The comparatively generously-sized barn which bore the same general aspect of neatness and order was also arranged with reference to convenience and saving. In it was a primitive one-horse power mill, used in the winter season for grinding food for his own and his neighbor's cattle. The farming tools were crude and clumsy and many of them were hand-made. The pig-pen was located immediately behind the cow-stables, and the manure pit, extending under both, and to which the pigs had access, had a water-tight cement foundation, so that no liquids were lost.

The owner of this little farm had been a teacher in an agricultural school, and had there earned and saved money enough to purchase these few acres, which were impoverished and unproductive when they came into his possession. He applied to this small patch of land the knowledge he had acquired of agricultural science, and, while admitting that he had yet much to learn, he was satisfied with the living which he could obtain from it for himself and family.

His system of cultivating land and management of stock will be referred to in detail further on when describing a larger farm, with cost of production, &c.

Computations.—The 10 acres of land just mentioned is a farm, and not a garden, and the land is recorded as of third quality. Those curious in computations may find it interesting to know how large a population could be maintained in the United States and territories belonging thereto, if the soil was there cultivated with the same degree of prudence and skill as the 10-acre farm mentioned.

The United States and territories contain, in area, 2,297,779,200 acres. Assuming that this area is all arable, and allowing 10 acres to a family of equal numbers (7 persons), it would support a population of 1,608,445,440, or 200,000,000 more than the entire population of the world. But, supposing that only half of the area of the United States and territories is susceptible of cultivation, even then eight-fourteenths of all the inhabitants of the earth could there find a comfortable living by cultivating the soil.

An average first-class Prussian farm.—The farm next described represents a fair average of the best Prussian farms, both in size and general management. The owner is a highly intelligent and thoroughly practical farmer, and personally superintends all the details of outdoor farm work, while his wife directs the indoor business, including the management of the dairy.

The industrious and gentlemanly owner of this farm entertains progressive ideas in regard to agricultural pursuits, and has made his business the subject of careful scientific investigation and study. He is not influenced by the usages of the past any farther than he finds them practical and in harmony with cultivated common sense.

A description of his farm and stock and system of management will, doubtless, be regarded as more reliable and valuable if made by himself. His answers to my questions will, therefore, be given as accurately as the translation from German into the English language, of a subject containing many technical terms and expressions, can be managed by the writer of this report.

QUESTIONS AND ANSWERS.

Question. How many acres of land are embraced in your farm, and what is its cost value, including buildings?—**Answer.** My farm contains the following divisions: 103.70 acres of plowed land; 18.3 acres of meadow land; 15.25 acres of wood land; 9.15 acres devoted to fruit and garden purposes; total, 146.40 acres. It contains four different grades or qualities of soil, which are known as second, third, fifth, and sixth. The cost value is \$36,500, including buildings, which cost \$9,000. The land without buildings has a cost value of about \$186 per acre, or \$114 per Prussian morgen. The grades or quality of farming lands in Prussia range from one, the highest, to six, the lowest—the average for the Kingdom is low, being about six. The law establishing the system of grading the quality of land has been in operation since 1856.

Q. What crops do you cultivate, including forest, and how many acres were devoted to each during the past year, 1885? and what was the average quantity and value of each crop per acre, including garden, under the head of "garden crop"?—**A.** About one-third of my farm is allowed to remain as fallow ground. My forest crop is only nineteen years old. I shall not disturb it for years to come, except to clear away the undergrowth. The value is not, therefore, given. The crops, quantity, and value, as gathered from the cultivated portion of my land during the past year, were as follows, and are regarded as a low average yield:

COST OF PRODUCTION.

325

*Crops; number of acres cultivated; quantity per acre in pounds, bushels, and tons, value of crop per acre, &c.**

[The values named are the lowest known to the market.]

Crops.	Acres cultivated.	Quantity produced per acre.	Number of bushels and tons per acre.	Value per acre.	Total value of crop.
		<i>Pounds.</i>	<i>"</i>		
Rye.....	18. 30	1, 992. 6	85. 58	\$32 18	\$588 90
Wheat.....	15. 25	2, 173. 8	36. 23	38 39	585 45
Oats.....	18. 30	2, 538. 4	79. 26	40 98	749 98
Potatoes.....	12. 20	14, 491. 8	241. 58	62 41	761 42
Sugar beets, as food for stock.....	7. 32	45, 286. 9	†20. 20	68 31	500 08
Clover, grass, and stubble beets, as food for stock.....	19. 52			35 11	685 34
Garden products and fruit.....					71 40
Total.....	90. 89				3, 942 47

* Rye, 56 pounds; wheat, 60 pounds; oats, 32 pounds, and potatoes, 60 pounds per bushel; 1 ton = 2, 240 pounds.

† Tons.

NOTE.—Stubble beets, which do not exhaust the soil much and yield abundantly, should be planted after the grain crop is harvested, and *without fertilizing*. They are easily planted, require but little care, and are cheaply harvested. The tops make most excellent food for cattle. They can also be converted into ensilage without removing the tops from the root.

The statements in the foregoing table were taken *verbatim* from the farmers' carefully kept books, and then converted from Prussian into English values and measure. As some of these statements are likely to attract attention, and possibly the accuracy of the process of conversion into English measure be criticised, I give below the table in the *original* figures, so that any one desiring can revise them.

Original table from which the facts and statements in the foregoing table were taken.

[Prussian morgen = 25,920 German square feet = 26,730 English square feet. 48,320 English square feet = 1 acre. 1 mark = 23.8 cents. 1 kilogram = 2.21 pounds.]

Crops.	Number of Prussian morgen cultivated.	Quantity per Prussian morgen produced.	Value per Prussian morgen.	Total value of crops.
		<i>Kilos.</i>	<i>Marks.</i>	<i>Marks.</i>
Rye.....	30	550	82. 50	2, 475
Wheat.....	25	600	98. 40	2, 460
Oats.....	30	700	105. 00	3, 150
Potatoes.....	20	4, 000	160. 00	3, 200
Sugar-beets, as food for cattle.....	12	12, 500	175. 00	2, 100
Clover, grass, and stubble-beets as food for stock.....	32		90. 00	2, 880
Garden products and fruit.....				300
Total.....	149			16, 565

COST OF PRODUCTION.

Question. What is the actual average cost per 100 pounds for producing, on your farm, wheat, rye, oats, potatoes, and sugar-beets, and what are the elements of cost stated in per cent. ?—Answer. According to the records in my books, which are carefully kept, the cost is as follows:

Produce.	Per 100 pounds.	Per bushel.
Wheat.....	\$1 40	\$0 84
Rye.....	1 32	67½
Oats.....	63	20½
Potatoes.....	26	16½
Sugar-beets.....	06	.....

The elements of cost entering into the production of these articles, as an example, stated in per cent., are as follows:

Elements of cost.	Wheat.	Potatoes.	Sugar-beets.
	Per cent.	Per cent.	Per cent.
Preparing land.....	20	20	20
Manure, prepared fertilizers, &c.....	40	40	40
Seed, sowing, &c.....	4½	10	2
Marketing and transportation.....	1	1	(*)
Food for workmen.....	6½	6	2
Labor.....	9	12	8
Interest on cost of land and buildings, and for taxes.....	1	1	1
Insurance, depreciation on buildings, &c.....	1	1	1
Repairs, tools, &c.....	1	1	1
Cost of keeping working animals.....	10	6	5
Per cent. remaining as profit.....	6	12	20
Total.....	100	100	100

* Fed to cattle.

† The cost for labor is low because potatoes are planted and harvested by children.

Potatoes and sugar-beets yield the largest profit, provided the beets are fed to my own stock and converted into meat, milk, butter, cheese, &c. In my opinion no more profitable crop can be raised as food for cattle than sugar-beets. If, however, the beets are sold to manufacturers of sugar the profit on the crop will not exceed 4 or 5 per cent.

COST OF LIVING.

Q. How many persons are in your family, not including those to whom you pay wages, and what is the total cost per year for their support? Please give elements of such cost.—A. My family consists of nine persons, three of them are children over fourteen years of age. My books show a total expenditure for their support of 3,000 marks, or \$714. The following table exhibits the items constituting such cost.

It should be borne in mind that the articles of food produced on my farm are stated at the actual cost of production, and not at the price they would command in the market.

Kind, quality, and cost of food and other items of expenditure, per year, for a farmer's family of nine persons, three being children over fourteen years of age.

Articles consumed.	Quantity.	Cost price.	Total cost.
		Cents.	
Meat and fish.....pounds.....	1, 105	10. 7	\$118 23
Milk.....quarts.....	1, 056	2. 3	24 30
Butter.....pounds.....	442	10. 7	47 55
Cheese.....do.....	110½	5. 3	5 94
Eggs (marked by the piece).....	300	1 each.	3 00
Bread (mostly black).....pounds.....	3, 978	1	39 78
Vegetables, sour-kraut, &c.....do.....	2, 210	½	11 05
Sugar.....do.....	53	5. 3	2 85
Sirup.....do.....	183	5. 3	7 05
Tea.....do.....	2½	110. 0	2 47
Coffee.....do.....	88½	16. 0	14 16
Fruit, dried and green.....do.....	221	2. 3	4 99
Salt, spices, and sundries.....			19 04
Total for food.....			300 41
Soap, starch, and domestic sundries.....			5 95
Fuel and lights.....			23 80
Beer, wine, and spirits.....			71 40
Luxuries (cigars, entertainments, &c.).....			47 60
Total.....			148 75
Clothing.....			119 00
School expenses, and for maintaining son in military service.....			144 32
Depreciation on furniture.....			23 60
			163 12
Total living expenses, per year.....			736 23
Cost, per year, per person for food.....			\$83 38
Cost, per day, per person for food.....			69½
Cost, per year, per person for clothing.....			12 22
Cost, per year, per person for beer, wine, spirits, fuel, light, cigars, amusements, and sundries.....			16 53
Total cost, per year, per person for living expenses, including cost of schools and maintaining son in army, depreciation of furniture, &c.....			81 80

Q. Very small quantities of cheese, eggs, sugar, and tea appear to have been consumed. Will you please explain that statement?—A. Articles of food produced on the farm that are marketable for cash are very sparingly used in the family. Cheese and eggs are consumed only in delicacies and on days when meat is not eaten, and tea is very rarely used, except when entertaining friends.

KIND AND QUALITY OF FOOD CONSUMED.

Q. Please give a statement showing as accurately as possible of what consists the average daily food of your farm laborers, and the average daily consumption, and average cost of food per day for one adult laborer.—A. The average consumption and cost of food for one adult laborer is about as follows:

	Cents.
For first breakfast: Milk, soup, and three slices of black bread.....	4½
For second breakfast, at 10 o'clock: One glass of whisky and one slice of bread and butter	2½
For dinner, at 12 o'clock: Soup, vegetables, and two slices of pork	9½
At 4 o'clock vespers: Coffee and once slice of black bread and butter.....	2½
For supper: Butter-milk, soup, and potatoes.....	4½
Total average cost of food per day	23½

About two and a half pounds of bread and one-third of a pound of pork is daily consumed besides vegetables. The men and women who work by the day are permitted to board themselves, if they so prefer, and they are allowed 19 cents per day for such purpose.

Q. As average food for working people, what articles do you regard as the most economical and healthy, and which contain the largest quantity of nutriment or protein?—A. Once or twice per week soup made of dried peas and beans, mixed with bacon and cooked together in one kettle; and once or twice per week sour-kraut, or conserved beans, i. e., young green beans preserved in salt, or carrots mixed with pork and cooked together, make an excellent, healthy, and sustaining winter diet. In summer, alternate with fresh vegetables mixed with potatoes and pork. This food I regard as the healthiest, cheapest, and most nutritious for the midday meal.

Among the articles of food mentioned dried peas and beans contain the largest quantity of proteine. German black bread, which is made from unbolted rye flour and leaven, and which is consumed in great quantities by the working people, is also rich in proteine. Potatoes contain the smallest amount of proteine, and are, therefore, as food for working people, too expensive and not sufficiently nourishing. For supper I regard butter-milk soup, mixed with wheat flour, as an exceptionally excellent food, being healthy, nutritious, and economical.

MANURE AND FERTILIZERS.

Q. What kind of fertilizers are used on your farm, how are they prepared, and what kind applied to different crops, give the best results?—A. I have obtained the best results from manure produced on my own farm. But there is material difference in the qualities of "barn-yard manure." The bedding which I provide for my stock, and the food which I give them, are selected with express reference to the quality of the manure produced, and the properties which I desire to have it contain. I feed my cattle unsparingly with good and nutritious food, and thus secure in the manure the precise properties or elements which the crops have taken out of the soil. The manure of sparingly fed and poor cattle has but little virtue as a fertilizer. In order that the strength and vital properties of the manure may not be lost while it is lying in the pit, which has a water-tight foundation, I spread it out into thin layers, and then turn in my hogs to work it over and stamp it into as compact a mass as possible. The rain and the liquids from the stable keep it cool.

Immediately after the manure is carried on to the field I have it spread, for the reason that if allowed to remain in piles it ferments and much of its valuable properties is lost. A kind of fungus growth is created which not only consumes a large portion of the nitrogen which the manure contains, but which also produces other direct evil influences upon the crops.

In cases where a large quantity of nitrogen is needed I add to my compost-heap or manure-pit a desirable amount of Chili saltpeter.

Experience has thoroughly convinced me that by a rotation system of having one particular crop follow another many entirely satisfactory crops may be produced without the aid of fertilizers, the crop providing, in some way, for its own nourishment.

In cases where the growth of a crop seems to have been checked for lack of nutri-

ment, or which needs forcing by reason of being late or otherwise, I use Chili salt-peter in a powdered form and spread it upon the field previous to rain.

It is very desirable that farmers should know what are the precise substances which different plants take out of the soil. Without this knowledge much of the advantage and profit arising from fertilization and a rotation in certain crops will be lost. I regard frequent and light fertilizing as a preferable method.

For your further information I will add that my experience teaches me that, among the different kinds of grain, *wheat* requires the greatest quantity of nitrogen, while *oats* thrive on a small supply of this indispensable element, without which success in agricultural pursuits is uncertain. Potatoes require much "chlor," and clover needs a liberal supply of lime.

THE EIGHT-YEAR ROTATION SYSTEM.

Q. Please describe your system of cultivating different crops, and give your views as to the advantages, or otherwise, of plowing and preparing the soil in the fall season for spring crops. What is the loss and gain?—A. I have no land of first and second quality. My farm is composed of third, fourth, fifth, and sixth grade land, and I cultivate it on the plan of an "octennial turn" (*8 jährige Fruchtfolge*), which process has proved to be a very encouraging arrangement, both as to quantity and quality of crops produced, as well as to the saving of manure and the preservation of the soil in a productive condition.

I now regard the rotation system as the foundation of successful farming. The system must, of course, be intelligently pursued, adapting the kind and quality of crops cultivated to the particular needs and kind of farming carried on—not having too much of one crop nor too little of another. If for milk and stock, the crops cultivated should be in harmony with the requirements for such purposes. One-half of my farm is devoted to the production of rye, wheat, and oats; one-quarter to potatoes, sugar-beets, and other root crops, and one-quarter to clover and grass, and these crops are adapted to the number and kind of stock I keep.

My land is divided into two grades. The first grade is composed of third and fourth quality, and the second grade is composed of fifth and sixth quality.

ROTATION SYSTEM ILLUSTRATED.

For each grade I have established a separate rotation rule, which is always strictly adhered to, and which returns the same crop to the same piece of land every eighth year only. The crops assigned to land of the second grade will thrive thereon, while other crops requiring a different and better soil are assigned to land of the first grade in order to insure a satisfactory yield.

This octennial rotation system will be better understood by referring for explanations to the following diagrams:

Diagram showing system of octennial rotation in crops.

FIRST GRADE—LAND OF THIRD AND FOURTH QUALITY.

Year.	Field I.	Field II.	Field III.	Field IV.
First year.....	Red clover.....	Oats.....	Sugar-beets.....	Wheat.
Second year.....	Oats.....	Sugar-beets.....	Wheat.....	Grass.
Third year.....	Sugar-beets.....	Wheat.....	Grass.....	Rye.*
Fourth year.....	Wheat.....	Grass.....	Rye.....	Potatoes.
Fifth year.....	Grass.....	Rye.....	Potatoes.....	Wheat.
Sixth year.....	Rye.....	Potatoes.....	Wheat.....	Red clover.
Seventh year.....	Potatoes.....	Wheat.....	Red clover.....	Oats.
Eighth year.....	Wheat.....	Red clover.....	Oats.....	Sugar-beets.
Year.	Field V.	Field VI.	Field VII.	Field VIII.
First year.....	Grass.....	Rye.....	Potatoes.....	Wheat.
Second year.....	Rye.....	Potatoes.....	Wheat.....	Red clover.
Third year.....	Potatoes.....	Wheat.....	Red clover.....	Oats.
Fourth year.....	Wheat.....	Red clover.....	Oats.....	Sugar-beets.
Fifth year.....	Red clover.....	Oats.....	Sugar-beets.....	Wheat.
Sixth year.....	Oats.....	Sugar-beets.....	Wheat.....	Grass.
Seventh year.....	Sugar-beets.....	Wheat.....	Grass.....	Rye.*
Eighth year.....	Wheat.....	Grass.....	Rye.....	Potatoes.

* After the harvest, plant stubble beets.

SECOND GRADE—LAND OF FIFTH AND SIXTH QUALITY.

Year.	Field I.	Field II.	Field III.	Field IV.
First year	Red clover.....	Rye	$\frac{1}{2}$ clover, $\frac{1}{2}$ vetch, $\frac{1}{2}$ fallow.*	Oats.
Second year	Rye	$\frac{1}{2}$ clover, $\frac{1}{2}$ vetch, $\frac{1}{2}$ fallow.*	Oats	Grass and white clover.
Third year	$\frac{1}{2}$ clover, $\frac{1}{2}$ vetch, $\frac{1}{2}$ fallow.*	Oats	Grass and white clover.	Oats.
Fourth year	Oats	Grass and white clover.	Oats	Potatoes.
Fifth year	Grass and white clover.	Oats	Potatoes.....	Rye.
Sixth year	Oats	Potatoes	Rye	Red clover.
Seventh year	Potatoes	Rye	Red clover.....	Rye.
Eighth year	Rye	Red clover	Rye	$\frac{1}{2}$ clover, $\frac{1}{2}$ vetch, $\frac{1}{2}$ fallow.*

Year.	Field V.	Field VI.	Field VII.	Field VIII.
First year	Grass and white clover.	Oats	Potatoes.....	Rye.
Second year	Oats	Potatoes.....	Rye	Red clover.
Third year	Potatoes	Rye	Red clover.....	Rye.
Fourth year	Rye	Red clover	Rye	$\frac{1}{2}$ clover, $\frac{1}{2}$ vetch, $\frac{1}{2}$ fallow.*
Fifth year	Red clover.....	Rye.....	$\frac{1}{2}$ clover, $\frac{1}{2}$ vetch, $\frac{1}{2}$ fallow.*	Oats.
Sixth year	Rye.....	$\frac{1}{2}$ clover, $\frac{1}{2}$ vetch, $\frac{1}{2}$ fallow.*	Oats	Grass and white clover.
Seventh year	$\frac{1}{2}$ clover, $\frac{1}{2}$ vetch, $\frac{1}{2}$ fallow.*	Oats	Grass and white clover.	Oats.
Eighth year	Oats	Grass and white clover.	Oats	Potatoes.

*After harvest, fallow beets and "Erdkohlrahl." The latter is a kind of turnip-beet. The main root grows above ground. It is prolific in tops, which cattle relish, and draws much of its nutriment from the air. Both root and tops make good ensilage.

It will be observed that my rule is to have clover or grass always follow a grain crop, as grass does not exhaust the nitrogenous elements in the soil. Grass and clover possess the peculiar property of drawing in from the air nitrogen and conducting it through the roots into the ground; and as these plants do not absorb nitrogen from the earth the soil they grow in is not only not exhausted, but enriched. The roots are also filled with nitrogen, and when plowed in are quite as valuable as a coating of best quality of manure. Thus, as the liberal supply of nitrogen which grass and clover give to the soil is left there, the succeeding crops, which require this vital, nourishing element, are correspondingly benefited.

A piece of ground that has no crop upon it I never leave unplowed in the fall season. All fallow land is thrown into high ridges so that frost, rain, and wind may penetrate and decompose the soil, and render it mellow, and at the same time destroy weeds and insects. In the spring it is again plowed and subjected for a period to the drying influence of March winds before I begin to prepare it for planting.

CROPS THAT ARE MOST PROFITABLE.

Q. What crops cultivated upon your farm do you regard as the most profitable?—A. Without doubt, sugar-beets and potatoes are my most profitable crops; but should I disturb my octennial rotation system by producing these crops in larger quantities than named in answer to a previous question, I would soon exhaust the land, and bring into disorder my present method of raising and fattening cattle, which is in harmony with my general farming system.

HOURS FOR FARM LABOR AND WAGES.

Q. What are the usual hours of labor for farm hands, and what are the average wages paid them?—A. For the entire year, the average daily time for labor is twelve hours—thirteen hours in summer and eleven hours during winter months. The average rate of wages is as follows:

First laborer, in charge of teams, per year, with board..... \$71 50
 Second laborer, per year, with board..... 39 25.

Third laborer, per year, with board.....	\$26 18
Man in charge of cattle, per year, with board.....	119 00
First maid servants, per year, with board.....	45 25
Shepherds, per year, with board.....	*35 75
First transient male laborer, per day, without board.....	67
Second transient male laborer, per day, without board.....	62
Third transient male laborer, per day, without board.....	57
Female laborers, per hour, board without lodging.....	3

RAISING STOCK FOR FOOD PURPOSES.

Q. Please give your experience in raising animals for food purposes, and state what food and system of feeding produces best results, giving cost, &c., per pound for raising and fattening cattle, hogs, &c.—A. After cows cease to produce milk in paying quantities they are fattened. I also purchase each year, at a cost of 7 cents per pound, live weight, four to six oxen. After they have been fed four to five months they are sold for 8 cents per pound, live weight.

I find that the Yorkshire breed of hogs give the most profitable results. I purchase these when they weigh 45 to 50 pounds, at 8½ cents per pound, live weight. In six or seven months they weigh about 225 pounds, and are sold at 8½ cents, live weight.

Sheep which I raise are a "cross" between Southampton and Shropshire breeds. I find this combination gives, in wool and meat, the most satisfactory results. I raise per year about sixty lambs, and during the same period sixty sheep are sold at about 6½ cents per pound, live weight.

FOOD FOR MILK-PRODUCING COWS, AND SYSTEM OF FEEDING THEM.

Q. Please give your opinion and the results of your experience as to food for cows and system of feeding them, for producing milk for sale and milk for the manufacture of butter and cheese, naming kinds of food, method of preparation, &c.—A. For the production of milk for sale I feed "returns of malt" (malt after it is brewed) as fresh as possible from the brewery, and green food cut fine. I add to the refuse malt a proper quantity of salt to preserve it and make it appetizing (*schmeckhaft*). The shells of malt after it is brewed contain a white substance which is rich in nitrogen. Bran also contains nitrogen in considerable quantities. For the production of milk for the manufacture of butter and cheese I feed flax-seed meal, cotton-seed meal, prepared and ground on my premises, and ground-nut meal and bran, together with green food.

I keep 18 cows of the Holland breed, which, from carefully made experiments, have proved to be in this country the best and most profitable milkers. Confinement in the stall does not check their generous milk-giving tendencies. They are kept during the entire year in the stable, and the average production of milk is about 15 quarts per day per cow.

The selling price of milk to dealers, who call for it, is 3 cents per quart. The milk of a portion of my cows is converted into butter and cheese. This product represents a milk value of only 2.6 cents per quart, not including expense of manufacture; but the buttermilk and whey, which is converted into excellent food for hogs, represents a considerable additional value.

In order to keep my cows in a condition of perfect health at all times, and to secure during summer and winter the same quantity and quality of milk, I provide for perfect ventilation, uniform temperature of not less than 13° Reaumur (about 65° Fahrenheit), or as near that as possible, during summer and winter; soft bedding, and thorough cleanliness of cows and stable. They are never given very cold water. These conditions I regard as indispensable.

Food.—In summer they are fed, as before stated, a specially prepared green food, "returns of malt," bran, and meal made from flax-seed, cotton-seed, and ground-nuts. In winter hay and ensilage are substituted for the green food.

A cow weighing 1,100 pounds, live weight, requires per day 33 pounds of dry, solid substance, 3.3 pounds of protein, and 17½ pounds "*Kohlenhydrate*" (fat-properties). In order to supply these requirements I feed in summer, daily, 121 pounds green clover; in fall 110 pounds sugar-beets, mixed with the tops of root crops, and 10 pounds dry hay, and in winter 82 pounds of sugar-beets and 16½ pounds clover hay. In all seasons I add, per day, 11 pounds of bran and flax-seed meal mixed together.

The average cost of this food is 43 cents per day per cow, which expense is more than covered by the milk produced—15 quarts, at 3 cents, 45 cents. The additional costs are, straw for bedding, 4½ cents; care and medicine, 2½ cents; rent, 1 cent; in-

*And an allowance of one-seventh part of the profit gained by raising sheep.

terest on cost of cows, 1½ cents, making 8 cents, which latter expense is more than covered by the value of the manure. The profit, so far, appears to be small, but I have the cow still on hand, which I sell for beef as soon as she is no longer profitable as a producer of milk. My cows are always in a condition entirely fit for the market.

An analysis of the prepared food which I have fed to my stock with most satisfactory results is given in the following table, for the purpose of showing the proportion of fat and protein which it contains:

Articles of food.	Fat- properties.	Protein.
	Per cent.	Per cent.
Ground-nut cake	11.83	45.62
Flax-seed meal	12.02	33.75
Palm cake	9.42	16.25
Ground-nut shell *	15.25	22.81
Cotton-seed meal (hulled)	13.31	43.50
Rape-seed cake	10.83	30.50
Poppy-seed cake	13.11	37.75
Dried refuse, ground malt	9.88	22.62

* The outside woody substance is first removed by machinery.

ENSILAGE.

I prepare ensilage in the following manner: Before the beginning of winter I level off strips of ground that sheds water, near the barn, about 4 feet wide and as long as may be desired, and all the green food, including stubble beets and some other roots, which at the close of the fall season have not been consumed, I deposit on this ground in thin layers, pressing each layer as compactly as possible, with the feet, or otherwise, until the long heap is from 3 to 4 feet high, tapering from the bottom to a point at the top. It is then covered with clean straw, and this with a layer of earth deep enough only to prevent freezing and to keep out the air as much as possible. Fermentation ceases very soon when the material is closely pressed and kept cool.

These beds of ensilage are opened, when the food is wanted, at one end of the ridge, so as to expose only a small surface to the air. Green food and roots with foliage are preserved in this way, ferments enough only to give the ensilage a winery taste and odor, and it is greatly relished by the cattle. There is no difficulty in preserving it by this simple method until the green food of spring becomes abundant. Ensilage prepared in this manner may be safely fed to cows until the calf is dropped. Only a slight fermentation is necessary or desirable, otherwise large portions of the protein is lost. I preserve by this easy method green clover, lupines, spurry, beet-roots and tops, carrots, cichoraceous plants, and maize. The yellow lupines, which draw from the air a large quantity of nitrogen, is an excellent ingredient in ensilage, and is, therefore, a valuable crop, both for the soil and as food for cattle.

Some experiments have recently been made with a view of preparing a so-called "sweet ensilage," by which process the formation of *lactic acid* is wholly prevented. It can be done by providing air-tight, water-tight, and heat-tight structures, but the process is expensive, and the ensilage is no better, if as good, as that preserved by the inexpensive methods previously described.

Q. Do you keep books in which are recorded all of your farming transactions, and the knowledge which your observations and experience have given you?—A. Certainly. I keep a day-book which shows every item of receipts and expenses, and another in which is recorded every matter of interest connected with my farming transactions. Without these books I should feel like the captain of a ship at sea who was trying to navigate his vessel without compass or rudder.

COTTON-SEED AS FOOD FOR CATTLE.

Unhulled cotton-seed cake is highly appreciated by English farmers on account of its well-known properties as food for fattening cattle as well as for the production of milk. The unhulled cotton-seed cake, it is said, is preferred by them to hulled cotton-seed cake for the reason that the former is cheaper, and because the hulls contain a medicinal substance which is regarded as an excellent remedy for and preventive of diarrhea, a disease often resulting from overfeeding with rich fresh food, beet-roots, &c. The cotton-seed cake consumed in England is

mostly made from Egyptian seed, which, it is claimed, is much more easily cleaned than American seed. The idea also there prevails that hulled cotton-seed cake produces diarrhetic tendencies, while the German farmers, apparently for good reasons, entertain precisely opposite opinions, and greatly prefer cake and meal made from American hulled seed.

Most of the cotton-seed consumed in Germany comes from the United States. The difference in the quality of American and Egyptian seed may account for the conflict of opinion existing between English and German farmers relative to the properties of hulled and unhulled seed.

Professor Dietrich, of Marburg, has made a careful analysis of the meal made from hulled and unhulled cotton-seed, and the following is the

Result of the analysis.

Parts in 100.	Meal from hulled seed.	Meal from unhulled seed.	
		First test.	Second test.
Water.....	9.5	11.36	10.00
Protein.....	42.5	22.56	22.06
Fat.....	14.9	6.36	7.01
Extracts, free of nitrogen.....	21.8	24.94	27.12
Fibrous stuffs.....	8.6	25.78	25.68
Minerals.....	7.2	8.15	6.50
	100	100	100

EXPERIMENTS.

Some interesting and careful experiments have recently been made in Prussia for the purpose of establishing the comparative value of hulled and unhulled cotton-seed meal as food for fattening cattle. These experiments have been conducted by competent gentlemen, who were deeply interested in the results, which are exhibited in the foregoing tables:

Results obtained from feeding unhulled cotton-seed meal to sixteen different oxen, which were being fattened for the market.

Ox.	Weight.			At end of test.		Number of days fed.	Pounds gained.
	Oct. 28, 1882.	Nov. 10, 1882.	Dec. 10, 1882.	Date.	Weight.		
	<i>Pounds.</i>	<i>Pounds.</i>	<i>Pounds.</i>		<i>Pounds.</i>		
No. 1....	1,133	1,188	1,254	Jan. 30, 1883	1,309	94	176
No. 2....	1,138	1,188	1,281	Jan. 30, 1883	1,309	94	171
No. 3....	1,264	1,386	1,441	Feb. 15, 1883	1,518	114	154
No. 4....	1,441	1,518	1,507	Feb. 19, 1883	1,650	114	209
No. 5....	1,564	1,379	1,430	Jan. 30, 1883	1,474	94	110
No. 6....	1,495	1,518	1,502	Jan. 30, 1883	1,595	94	110
No. 7....	1,419	1,496	1,578	Feb. 19, 1883	1,727	114	208
No. 8....	1,375	1,408	1,496	Feb. 19, 1883	1,551	114	176
No. 9....	1,122	1,166	1,232	Jan. 15, 1883	1,265	79	143
No. 10....	1,111	1,144	1,199	Jan. 15, 1883	1,210	79	99
No. 11....	1,430	1,474	1,562	Jan. 15, 1883	1,584	79	154
No. 12....	1,386	1,408	1,485	Jan. 15, 1883	1,507	79	121
No. 13....	1,188	1,232	1,298	Jan. 23, 1883	1,342	87	154
No. 14....	1,155	1,221	1,287	Jan. 23, 1883	1,331	87	176
No. 15....	1,320	1,386	1,441	Jan. 10, 1883	1,518	74	196
No. 16....	1,265	1,331	1,386	Jan. 10, 1883	1,452	74	187

NOTE.—General average gain per day per ox, 2.4 pounds. Highest average gain per day per ox, 2.7 pounds.

Results obtained from feeding hulled cotton-seed meal to 16 different oxen which were being fattened for the market.

Ox.	Weight.					At end of test.		Number of days fed.	Pounds gained.
	Oct. 3, 1883.*	Nov. 3, 1883.	Dec. 1, 1883.	Dec. 31, 1883.	Feb. 2, 1884.	Date.	Weight.		
	Pounds.	Pounds.	Pounds.	Pounds.	Pounds.	1884.	Pounds.		
No. 1.	1,221	1,298	1,397	1,463	1,529	Feb. 27	1,562	146	341
No. 2.	1,155	1,188	1,303	1,408	1,485	Feb. 27	1,518	146	363
No. 3.	1,199	1,210	1,336	1,419	1,485	Feb. 27	1,496	146	297
No. 4.	1,100	1,166	1,224	1,342	1,419	Feb. 27	1,430	146	330
No. 5.	1,188	1,234	1,353	1,386	1,403	Feb. 14	1,563	133	275
No. 6.	1,122	1,155	1,254	1,343	1,376	Feb. 14	1,575	133	253
No. 7.	1,100	1,224	1,353	1,480	1,507	Feb. 4	1,507	123	407
No. 8.	1,210	1,298	1,386	1,452	1,540	Feb. 4	1,540	123	330
No. 9.	1,034	1,243	1,298	1,344	1,419	Feb. 8	1,435	121	396
No. 10.	1,034	1,309	1,419	1,474	1,529	Feb. 8	1,565	121	561
No. 11.	1,089	1,166	1,221	1,276	1,343	Feb. 8	1,358	121	264
No. 12.	1,144	1,199	1,309	1,405	1,474	Feb. 8	1,474	121	330
No. 13.	1,276	1,342	1,441	1,529	1,617	Feb. 14	1,628	133	352
No. 14.	1,310	1,243	1,320	1,419	1,485	Feb. 14	1,529	133	319
No. 15.	1,133	1,243	1,386	1,506	1,562	Feb. 14	1,395	133	462
No. 16.	1,177	1,237	1,320	1,419	1,485	Feb. 14	1,507	133	330

*These oxen which show only a slight increase in weight were obliged to work half of the time.

NOTE.—General average gain per day per ox 2.8 pounds. Highest average gain per day per ox, 4.4 pounds.

On the first day of the trial the unhulled American cotton-seed meal was fed in quantities of three-fourths of a pound and the hulled cotton-seed meal in quantities of $1\frac{1}{4}$ pounds per day, and gradually increased to $3\frac{1}{4}$ pounds per day.

In addition to the cotton-seed meal, an ox weighing over 1,100 pounds (live weight) received per day 9 pounds of hay, 9 pounds chopped straw, and 80 liters of brewer's mash.

After a period of fourteen days twelve of the animals that were fed with unhulled American cotton-seed meal were attacked with diarrhœa. They were then fed for two days with meal made from hulled seed, when the healthy condition of the bowels was fully restored.

FARM LABORERS IN PRUSSIA.

For the purpose of presenting in a concise way the average condition, earnings, and manner of living of the best class of farm laborers in Prussia, the following information is given, which was obtained from a farmer who had rented a small house belonging to a large farm upon which he is employed as first hand on daily wages.

His family consists of himself, wife, and five children, the latter all under thirteen years of age. The husband and wife are industrious, temperate, and economical. They have no property besides the furniture in their little house, connected with which is three-fourths of an acre of land which they have the right to cultivate, and which is included in the rent they pay for the premises.

Their earnings and expenses were as follows:

YEARLY EARNINGS.	
Wages of husband	\$142 80
Wages of wife during harvest time	11 90
Potatoes raised and sold	19 04
Gained by sale of—	
Fatted pig	28 56
Milk of goat	11 90
Vegetables raised by themselves	14 28
Total yearly earnings	226 48

YEARLY EXPENSES.

Food:	
Wheat bread	\$7 14
Rye black bread	24 75
Pork (of hog raised by self)	28 56
Potatoes and other vegetables, raised by self	19 04
Cheese	4 95
Sirup	5 00
Coffee	3 71
Salt, pepper, and sundries	1 24
Total for food for seven persons	\$94 39

CLOTHING.

1 every-day suit of clothing for husband	\$4 76
1 every-day suit of clothing for wife	3 57
Every third year, 1 Sunday suit for husband, at a cost of \$9.52	3 17½
Every third year, 1 Sunday suit for wife, \$4.76	1 58½
6 pairs wooden shoes	1 14
4 pairs wooden shoes	57
1 pair leather shoes for husband, including repairs	3 57
1 pair leather shoes for wife	2 62
3 shirts for husband	1 07
3 shirts for wife	71
5 suits of clothing for the children	5 95
12 pairs wooden shoes for the children	1 14
5 pairs leather shoes for the children	5 35
Socks and stockings for the children	4 76
Total for clothing for seven persons	39 97
Rent of house and three-fourths acre of land	35 70
Fuel	14 28
Oil, soaps, &c	3 71
Total	53 69
Bed-clothing	4 76
Repairs of furniture, tools, &c	2 38
Doctor's bill	2 38
Amount paid for young pig	4 76
Amount paid for meal for goat and pig	16 66
Tobacco and beer	7 14
	38 08
Total yearly expenses for seven persons	226 13

Cost per year per person for food	13 48
Cost per day per person for food	37½
Cost per year per person for clothing	5 22
Total living expenses per year per person	32 30
Earnings per year more than expenses	2 35

THE PRODUCTION OF MILK FOR DIFFERENT PURPOSES.

With a view of adding some additional information regarding the production of milk for various purposes, and also with a view of showing from what breed of cows the best results are obtained by a well-known scientific gentleman who gives especial attention to the subject, I visited the dairy-farm of Dr. von R., and obtained, through his courtesy, the following reliable data, which exhibit his system of feeding cows, and the kind, quantity, and quality of food, and the results obtained therefrom, which are interesting.

Cow No. 1 is a pure black, of the "Oldenburg breed," and weighs 1,430 pounds. This cow was purchased and placed in the stall on the

17th of April, 1885, and dropped her fourth calf on the 25th day of the same month. The daily food provided for this and all other cows in the dairy-house is as follows:

	Pounds.
Coarse ground barley.....	9
Wheat bran	6½
Flax-seed meal	2½
Sweet hay, from the shore of the River Rhine.....	25½

During the first three months after the calf was dropped, the daily average production of this cow was 28 quarts of milk of the best quality. At this date, ten months since her calf was born, her average production of milk is 15 quarts per day.

Cow No. 2 is red and white, of what is known here as the "Cleveland breed," and weighs 1,485 pounds. (From a district in Germany near the frontier of Holland, of which Cleve is the chief town.) This cow was purchased and placed in the stall on the 1st day of May, 1885, and dropped her calf on the 4th day of the same month. With the same food as previously mentioned this cow, during the first three months after her calf was born, gave the average daily quantity, 30 quarts of very rich milk, and at this date, nine months since her calf was dropped, she produces a daily average of 16 quarts.

Cow No. 3 is black, and from the pure "Holland breed" stock. This cow, for several months after she was placed in the stall, produced on an average 34 quarts of excellent milk per day, which is something more than the general average of good Holland breed cows. She has been farrow for nearly three years, and her average daily yield at this date is 13 quarts. Ten months after she dropped her calf, she gave on an average 24 quarts per day. Twenty-two quarts per day, when fed in the stall, as above described, is about the daily average of a good cow of the "Holland breed," ten months after she has dropped her calf.

It must not be forgotten that the cows described are never sent to the pasture, but stand in the stall during the entire year.

An analysis by Dr. Bücking, of Orefeld, of the milk produced in the dairy of Dr. von R., referred to, exhibits the following result:

Solid substances.	Per cent.	Remarks.
Fat	5.00 }	Creates good respiration and heat in the body of the consumer. Creates blood. Creates blood and bone.
Milk-sugar	5.00 }	
Casein and albumen	2.85 }	
Salt	0.72 }	
Solid substance.....	13.57	
Water.....	86.43	
Total.....	100.00	

The above analysis was prepared expressly for this report.

Food.—The milk produced in Dr. von R.'s dairy is largely consumed by children, especially infants, by persons seeking to invigorate the body after illness or otherwise, and for use in hospitals. His object, therefore, is to produce milk of the purest and richest quality, without reference to quantity, and which will strengthen and nourish the bodies of those who consume it. To accomplish this result the food provided and fed to his cows is as follows in kind, quantity, and quality (in quantities as previously named): Wheat-bran (especially), rye-bran, coarse-ground barley, flax-seed meal, and fine, sweet hay from the shores of the river Rhine.

For the production of milk for sale in the general market, and where quantity and not quality is the object aimed at, farmers feed their cows such articles, for example, as brewer's mash, sugar-beets, tops of common beet-roots, &c. Such food contains a large proportion of water, and is a natural way, perhaps, of introducing that element into milk.

The opinion prevailing here is almost universally in favor of the "Holland breed" of cows as being the most desirable.

GERMAN AND AMERICAN FARMING TOOLS.

In a country where every branch of culture, scientific and otherwise, known to civilization has attained the first position, it is surprising that very many of the implements used in agricultural pursuits should remain so crude and primitive in form, weight, and other particulars.

A somewhat extended investigation in the farming districts of the most densely populated parts of Prussia, and in localities in the immediate vicinity of great commercial centers, and within four or five hours of the great sea-ports on the Continent, a style of farming tools are now almost in universal use which were discarded in America for improved systems more than a hundred years ago.

The accompanying illustration* shows a few of the smaller kinds of farming tools that are now in general use in Prussia. The collection was made and photographed for the purpose of exhibiting to manufacturers of farming tools in America the particular needs of farmers in Germany. That an extensive opening and good market for American tools could be found here, if worked up in a proper way, cannot be doubted. American agricultural tools are now sent, in considerable quantities, to German sea-ports—notably to Hamburg—but not one-half of 1 per cent. of the small tools in use in this part of Prussia are of American manufacture, when, under judicious management, it is believed they could "take the market."

Slight modifications in structure of American tools would be necessary in order to meet German wishes and needs. In the collection photographed an American pitch-fork and hoe will be noticed by way of comparison. They are light and strong, and would be popular except for the manner in which the handle is attached to the fork. General complaint is made of American forks, hoes, shovels, and tools of that description that the handles are attached to them in such a way that if the handle breaks the tool is lost, because it is difficult, if not impossible, to mend it by putting in a new handle.

If American tools of this description could be made with a socket—



thus or similar—into which a handle could be inserted and easily taken out if broken, such tools would be very popular.

If, however, manufacturers in the United States desire a market here for such articles they must send a competent person to study the peculiar wants of German farmers, and then establish agencies. There is

* Illustration not published.

no difficulty in finding active persons who will undertake to sell the goods.

Short handles on shovels, spades, manure forks, &c., with a ring for the hand, thus—are not used in this part of Germany. Handles for digging tools must be 4½ feet long, with a knob on the end, and the handles of tools used in handling grain, grass, &c., must be 6 feet long.

The following is a description of the tools, illustrated by the photograph just mentioned:

No. 1. Basket mat, used instead of a fanning-mill, for cleaning grain. The thrashed grain is spread upon the mat, which, during a strong wind, is held and shaken by two or more persons, while the wind blows away the chaff.

No. 2. Ax for cutting wood and branches, and is to be found in every German house. It is preferred to the hatchet.

No. 3. German ax, with mended handle.

No. 4. Hammer, with anvil, for mending scythes in the field.

Nos. 5 and 6. Narrow and broad weeding-hoe.

No. 7. Sickle, with short curve, for cutting grass.

No. 8. German scythe in general use for cutting grain, and a fork, with one tine, for gathering the cut grain for binding.

No. 9. Fork for turning hay.

No. 10. Flail for thrashing grain.

No. 11. Spade, with handle four feet long, with knob on the end.

No. 12. Fork for digging potatoes and beets.

No. 13. Two-sided hay-rake, with teeth standing at an inward pitch of about 70 degrees.

No. 14. Rake for gathering potatoes.

No. 15. American hay-fork, not liked because of the way in which the handle is attached to it, as previously mentioned.

No. 16. Rake for gathering hay.

No. 17. Scythe for cutting grass and clover.

No. 18. Manure-fork.

No. 19. Shovel for weeding purposes.

No. 20. Hoe used in cleaning garden walks, &c., American make, with objectionable handle.

No. 21. Pitch-fork with two tines.

No. 22. Pitch-fork with three tines.

It should not be forgotten that German farmers are obliged to economize, and tools that are constructed with a view of accomplishing much work at small expense will attract their attention.

PRUSSIAN AGRICULTURAL SCHOOLS.

It may interest American farmers to know what grade of agricultural schools are maintained in Prussia, which receive Government aid.

The highest school is the Agricultural Academy, which is connected with the great University at Bonn. This is a kind of normal school, established mainly for the education of farmers' sons and others who may desire to qualify themselves as teachers in different branches of agricultural pursuits.

In the second grade of agricultural schools students receive a complete education in six years, and, if graduating with honor, they are required to serve in the army only one year instead of three, which is the fixed period of service in times of peace.

The third grade are winter schools, which are attended by the sons of farmers during the winter season. The teachers in these schools travel during the summer and give lessons and lectures in all parts of the Kingdom.

The lowest grade are the agricultural training schools. These are managed by the teachers of the elementary schools and are attended by the sons of the more humble class of farmers and laborers, and the instruction is gratuitous.

GENERAL CONDITION OF AGRICULTURAL INDUSTRIES IN GERMANY.

The business of farming in Germany has been for some years and now is in a depressed and very unsatisfactory condition. This fact is particularly apparent in the prevailing low value of farms, as compared with previous years. It is said by those who are in a position to be well informed upon the subject, that in districts which are remote from large cities, and where the consumption of milk and other perishable farm products is small, that farming lands can be purchased for 50 per cent. of their former value.

Farmers who purchased their farms at the high prices of previous years, especially those prevailing after the German French war of 1870-'71, and who paid in full for them, have sunk, it is said, half of the capital thus invested. That larger class of farmers who purchased their land at about the same dates, making light payments in cash and giving heavy mortgages as security for balances due, have suffered still more severely.

The chief reason named as the cause of this downward tendency in the value of farming lands, which is still unchecked, and the continued impoverished condition of the middle class of farmers, are the unusually low prices, steadily maintained in all the markets of the country, for grain and cattle; and these depressed prices, it is said, have been brought upon the country in consequence of the immense importations from Russia, America, and the English East Indies of similar articles of food.

Many intelligent farmers mention, as one of the causes of agricultural depression, the operations of the German agrarian laws, which they say do not favor as much as they ought to do the general farming interests of the country, and refer especially to existing provisions, according to which children inheriting farm estates have the right to claim a division of the land, and require their respective shares to be set off for their separate use. The result naturally following is, that if the heirs avail themselves of their rights and insist upon such division of the land into equal parts, the share apportioned to each is generally too small for their separate support. Or, in case one heir should purchase the entire estate, he is obliged to place a mortgage upon it in order to raise the money necessary to settle with joint heirs, and in this way generally assumes burdens heavier than he can carry, and a following consequence is, in a large majority of cases, the money-lenders or speculators who hold the mortgages foreclose, and, by usual legal processes, take possession of the estate.

In this manner, it is stated, a surprisingly large number of farms fall into the hands of speculators, who either divide the land into small holdings for tenants, or combine several farms into one large tract, which is sold to capitalists, and they, in turn, rent the land to tenants, who, through careless management, allow it to depreciate in value and yield, and thus deprive the country of the natural abundance which the land is capable of producing.

As a consequence, it is, by some thinkers, apprehended that—in the absence of appropriate legislation upon the subject (but what kind of remedial legislation is not suggested)—the solid middle-class farmers will, sooner or later, disappear, and their lands gradually pass into the possession of a comparatively few and wealthy owners, as in England and Ireland.

It is also quite earnestly alleged by some energetic defenders of the farming interests that the manufacturing industries of the country have been better protected by legislation than the agricultural industries.

The Imperial Government have during the last two or three years carefully investigated the numerous complaints of farmers, and are now doing all that seems reasonable and possible for the agricultural classes, and the work of the imperial chancellor, who has been especially active in their behalf, appears to have been highly appreciated and gratefully acknowledged by farming communities. The prohibition of the importation of some articles of food, and the increased duties provided for others, does not, however, appear up to the present date to have benefited the farmers in a direct way, as the pressure of low prices upon agriculture still continues. But the new tariff law provides that a certain portion of the income from such increased import duties shall be paid over to certain district authorities for the benefit of farmers, and such sum is credited on their tax bills. In this manner they are indirectly benefited by the increased duties on food products.

It is said the Government contemplate, as a further measure of relief for agricultural industries, the establishment of a higher export duty on beet-root sugar.

The sugar manufactories are mostly in the hands of companies which control large amounts of capital, and only a few establishments are in possession of agricultural associations. Up to the present date the Government has refunded to the manufacturers the entire duties collected on exported sugar, and for this reason their dividends have been large; but farmers who produce the beets do not seem to have been benefited by this liberal measure, as the price of sugar-beets per ton has been tending steadily downward.

Farmers are, however, growing wise by experience, for they have learned that the conversion of their sugar-beet crops into beef, by feeding them to cattle, is a much more profitable transaction than selling them for sugar purposes at present prices, and the result will be probably an advance in the price of sugar during the next two or three years.

"Schnapps monopoly."—The most recent measure proposed in the interests of farmers, and which it is predicted will become a law, is what is termed "the schnapps" or brandy "monopoly." Nearly all large farms have small brandy distilleries connected with them. There are also many small farms that are in some way connected with such distilleries, and their number would be much larger if they were able to compete with the wealthier and stronger producers. There are extensive districts of light, sandy soil in Germany, especially in East Prussia, which produce immense quantities of potatoes that are consumed in the manufacture of "schnapps" or brandy. In localities containing better soil this article is made from grain, fruits, and grape-skins, the latter producing the best quality of brandy. It is prophesied that the proposed "schnapps monopoly" law will be of material advantage to the owners of large farms who command much capital, but the benefit likely to accrue to owners of small farms has not yet been measured.

For the people who inhabit districts of country that are marshy and overflowed, the Imperial Government have provided liberal assistance by constructing and maintaining systems of efficient drainage. In mountainous localities forests have also been planted.

It is noticeable throughout Germany that scientific and modern methods of cultivating the soil are rapidly superseding past usages, and that the business of farming is being conducted upon the basis of higher intelligence and business-like principles.

J. F. POTTER, *Consul.*

UNITED STATES CONS LATE,
Orefeld, February 8, 1886.

MAYENCE.

REPORT OF COMMERCIAL AGENT SMITH.

DESCRIPTION OF LAND.

The Grand Duchy of Hesse, in which this consular district is situated, lies between $25^{\circ} 32'$ and $27^{\circ} 19'$ east longitude, and $49^{\circ} 24'$ and $50^{\circ} 51'$ north latitude, almost in the heart of Germany, at the northern extremity of the upper valley of the Rhine, which stretches from Basle to Mayence, possessing a length of about 190 miles and a breadth of from 14 to 28 miles, with an elevation above the sea at Basle of 800 feet, and at Mayence of 268, and sinking from south to north. In Hesse this valley has its greatest width and lowest depression.

The Duchy has an area of 139.49 German square miles (about 2,975 square miles, English measure), with a population of 956,170 on December 1, 1885, and is made up of three provinces, or geographical divisions, known as Upper Hesse, Starkenburg, and Rhine-Hesse, the first mentioned of which is north of the river Main, and the two latter south of that stream, between which two divisions runs a narrow strip of Prussian territory, while between the two southern provinces the Rhine passes in rapid flight. Of these provinces this consular district is considered to comprise the greater part of Rhine-Hesse, and a large part, but not the half, of Starkenburg. Upper Hesse is comprehended within the district embraced by the consulate-general at Frankfort.

Upper Hesse lies north of the Main, and is a difficult region to describe physically. It is situated high above the sea, and has no large plains. It is in part of an undulating character, and partly of a rough, unfertile, mountainous nature. The eastern and western divisions of the province are wholly unlike, the soil of the western portion being very fertile, while that of the eastern is very poor.

Starkenburg can best be designated as the district lying between the Rhine, Main, and Neckar, by which rivers it is almost completely encircled. The valley of the Rhine forms the western part of the province, to which the valley of the Main is adjoined on the north, while to the east of the former of these valleys, and in a southerly direction from the latter, runs the Odenwald. This Odenwald is a wooded mountain district between Darmstadt and Heidelberg, with a length of about 40 miles and a breadth of from 24 to 30. Its highest points are 1,959, 1,869, 1,834, 1,679, and 1,624 feet high, respectively. More than one-half of Starkenburg is of a flat character, consisting for the most part of a sandy soil, which towards the Odenwald seems to be much mixed with the remains of rocks of a primitive and volcanic origin, by which its bearing capacity is materially raised. Small scattered tracts of clay, clay-marl, loam, and turf also appear, which are highly fertile. In its most northerly part, in its foreparts and throughout the valley of the Gespreur—a small stream—the Odenwald exhibits an exceedingly rich, loamy soil; in its western part, so far as it can be used for agricultural purposes, it possesses chiefly a loamy to clayey soil, while in its entire eastern and southeastern parts a commoner loamy soil of variegated sandstone prevails.

Rhine-Hesse is the most fertile of the three provinces and the smallest, being about 533 square miles (English) in size, while Starkenburg has about 1,171, and Upper Hesse about 1,275. It is of a hilly nature, and is bounded on the north and east by the Rhine. Its soil is composed

of intermingled areas of calcareous marl, clay-marl, porous siliceous earth and chalky loam, not plastic, and quartz sand. The soil of the province is throughout rich, but suffers in certain places from dryness. Only at Worms, Guntersblum, Mayence, and Bingen does the province flatten out into a plain. Rhine-Hesse is almost entirely free of forest trees, while in the mountainous districts of the Odenwald (Starkenburg) and Vogelsberg (mountains of Upper Hesse) 60 per cent. of the land is occupied by forests.

The Duchy is well watered. The Rhine is the chief stream, and flows through the Duchy from Worms to Bingen, a distance of 59 miles.

As mountainous districts appear the Odenwald, with the Bergstrasse, in Starkenburg, the Vogelsberg, with the adjoining hilly country of the Wetterau in Upper Hesse, and the hilly district of Rhine Hesse.

The Odenwald is usually designated by the terms eastern and western. In the eastern Odenwald forest trees abound and agriculture is little followed. The western part of the Odenwald and the western part of the Vogelsberg are regarded as being among the best grass lands of the Duchy. In the Vogelsberg, however, is double as much pasture land to be met with as in the Odenwald, due to situation and soil characteristics. Both are well wooded. The beech is the leading tree. In both farm-land prevails. The western part of the Odenwald has a better situation than the Vogelsberg, and fruit trees, as well as the vine, grow there, while in the Vogelsberg they are to be found only in the valleys. While fallow land is unknown in the western Odenwald, it is to be found in the Vogelsberg, though only upon its higher elevations.

The Wetterau, the valley of the Rhine and Main, and Rhine-Hesse are distinguished by great fertility. In these parts agriculture gives its best results, though the western Odenwald stands in this respect near to it. Rhine-Hesse, in consequence of its southern situation and hilly character, is well adapted to the culture of the vine, and its people are chiefly concerned therewith and with agriculture. In the Wetterau the first requisite is wanting, in the valley of the Rhine and Main the second. In the valley of the Rhine and Main the dry, sandy soil is covered by forest trees; foliaceous and coniferous trees grow equally well. In Rhine-Hesse forest trees are only to be seen upon certain hills and upon the sandy and gravelly soil of the Rhine. Farm land predominates in all the sections mentioned, composing 60.50 and 84 per cent. of the entire soil. Pasture land is found in the Wetterau, valley of the Rhine and Main, and in the western Odenwald, almost in the same relative proportion, 11.5, 12.4, and 12 per cent. of the soil. In the Odenwald and Vogelsberg forest trees in certain districts occupy as much as 60 per cent. of the ground; in Rhine-Hesse there are hardly any.

The Duchy is composed of 768,113.13 hectares (1,898,084.35 acres) of land, 731,726.96 hectares (1,808,170.49 acres) of which are productive, or about 95½ per cent.; of these Starkenburg has 288,240.08 hectares (712,270.06 acres), Upper Hesse, 314,631.92 (777,486.93 acres), and Rhine-Hesse, 128,854.95 hectares (318,413.46 acres). In Starkenburg, of the productive amount, 126,393.32 hectares (312,330.53 acres) are farm and garden land, 34,645.79 hectares (85,613.21 acres) pasture and meadow land, 696.76 hectares (1,721.76 acres) vineland, and 126,504.19 hectares (312,604.50 acres) forest land. In Rhine-Hesse the relation is 106,423.73 hectares (262,983.67 acres) farm and garden land, 5,920.71 hectares (14,630.66 acres) pasture and meadow land, 10,108.33 hectares (24,978.69 acres) vineland, and 6,402.17 hectares forest land or woodland. Thus

50 per cent. of Hesse is said to be farm and garden land, 13 per cent. meadow and pasture land, 1.3 per cent. vineland, and 31 per cent. occupied by forest trees.

The amount of agricultural land in the hands of private parties consists of 3,272,958 parcels, of which 3,070,246 parcels, amounting to 462,724 hectares (1,143,437 acres) are worked by their owners, and 202,712, amounting to 65,297 hectares (161,345 acres) are worked by tenants. The agricultural land of the Duchy is thus very much split up. The Grand Duchy has 165,535 independent proprietors of farm land, of whom 59 per cent. hold less than one hectare (2,471.1 acres), 25.20 per cent. from 1 to 5 hectares, 10 per cent. from 5 to 10 hectares, 3.80 per cent. from 10 to 20 hectares, 1.90 per cent. from 20 to 50 hectares, 0.7 per cent. from 50 to 100 hectares, and only 0.03 per cent. over 100 hectares each. This division of the farm land of the duchy among so many proprietors is looked upon as disadvantageous to agriculture in general in the Duchy, and as a great impediment to technical progress. The farm land of the Duchy in its entirety, of about 382,856 hectares (946,037 acres) is estimated to have a value of about 824,000,000 marks (\$196,112,000), the value of the land in the little province of Rhine-Hesse being put down at 321,000,000 marks (\$76,398,000), while the large provinces of Starkenburg and Upper Hesse are put at 260,000,000 and 242,000,000 marks respectively (\$61,880,000 and \$57,586,000). Farm land is worth from 100 marks (\$23.80) to 24,000 marks (\$5,712) a hectare (2.47 acres). The vineland in the Duchy, amounting then to about 10,400 hectares (25,699 acres), was estimated several years ago to be worth 72,000,000 marks (\$17,136,000), of which that in the province of Rhine-Hesse was considered to have a value of 69,000,000 marks (\$16,422,000). The general price per hectare (2.47 acres) was 1,600 to 24,000 marks (\$380 to \$5,712), but some exceptionally good vineyards command as high as 50,000 marks (\$11,900) and more per hectare.

There are 161 landed proprietors who own more than 100 hectares (247.11 acres) of land, 10 of them being in Rhine-Hesse, 99 in Upper Hesse, and 79 in Starkenburg; 228 owning from 50 to 100 hectares, 36 in Rhine-Hesse, 113 in Upper Hesse, and 79 in Starkenburg; 1,803 owning from 20 to 50 hectares, 615 in Rhine-Hesse, 611 in Upper Hesse, and 577 in Starkenburg; and 6,363 owning from 10 to 20 hectares, 1,713 in Rhine-Hesse, 2,718 in Upper Hesse, and 1,932 in Starkenburg.

Wheat is grown chiefly in the Wetterau (Upper Hesse) and in Rhine-Hesse, but less in the Vogelsberg; and in the Odenwald and in the Rhine-Main Valley spelt is cultivated in its stead, though wheat is still raised here, while spelt is not grown in Rhine-Hesse and Upper Hesse. The highest percentage of rye and barley is to be met with in the Vogelsberg, the Rhine-Main Valley, Rhine-Hesse, and Wetterau. In the Odenwald they are both less cultivated. Potatoes are cultivated in pretty much the same degree all over the land, except in the Vogelsberg, where they are not so much planted. Tobacco and hops are both grown in the Rhine-Main Valley. In the Odenwald and in Rhine-Hesse they are but little cultivated, and in Upper Hesse almost not at all. Flax is grown principally in Upper Hesse, but little in Starkenburg, and not at all in Rhine-Hesse. Hemp is hardly cultivated in Upper Hesse, grown somewhat in the Wetterau, but much cultivated in the Odenwald.

A table which I shall annex to this dispatch will show the amount of land, by provinces, devoted to the cultivation of grain, leguminous plants, potatoes, &c., in 1884, and the yield per acre.

During thirty years, say from 1850 to 1880, the cultivation of the leading kinds of grain has increased in Hesse. The production of leguminous plants, on the other hand, diminished. It is calculated that Hesse produces about 1,075,000 centners* of grain less than it consumes, and that of potatoes about 1,760,000 centners more are raised than consumed, but the overproduction in the latter is used by the distilleries and starch factories and as food for cattle. The production of barley and oats, too, is hardly equal to the demand, and large quantities of maize, bran, fodder, and pod fruits have to be imported into the Duchy.

The soil of the Duchy, it is thought, is capable of yielding much more than it now does, and able to supply all its inhabitants' need of bread corn; but as it does not do so the conclusion must naturally be drawn therefrom that the culture of the land has not yet reached that development of which it is capable and which the increasing means of its people call for. One great reason why Hesse is behind other similarly fertile districts is due, it is conceived, to the manner in which the farm land of the Duchy is cut up into small farms. There are too many small farms, it is considered. Then, too, there is a failure to cultivate those plants which have a good commercial value, such as rape and hops, as well as a failure to follow extra employments, which are a great aid to agriculturists and give to agriculture a more industrial character, and, last of all, the Hessian farmers have it thrown up to them that they go abroad too little and see too little of what is being done in scientific farming in other parts of the country and pay too little attention to the education of their sons in technical and scientific directions.

Of rape, poppy, hemp, hops, &c., there has been a material diminution of cultivation shown during the last thirty years. In all the provinces there is only about half the quantity of these plants grown that were raised in 1850. The chief decrease has been observed in linseed, poppy, and hemp, and also rape, especially in Starkenburg and Rhine-Hesse. They have given place to the potato, which is more merchantable. Tobacco, too, is less cultivated.

The plants cultivated for fodder are clover (red, white, yellow, and incarnated), lucern, esparcet, and grasses. There has been an increased cultivation of these plants in the last thirty or forty years.

In general in the Duchy an increased cultivation of the soil has kept pace with the increase of population.

Pastures have fallen off in Rhine-Hesse, increased in Starkenburg, and remained the same in Upper Hesse.

The cultivation of fruit trees is spread over the entire Duchy; only in a few places in Starkenburg, and upon the higher elevations of the Vogelsberg, do they refuse to thrive. It is well recognized in Hesse that the cultivation of fruit trees is an important branch of farming for the farmers of the Duchy, and increased attention is being paid thereto. The changed commercial and economical conditions of the world brought about by the railroad now make the transportation easy for the farmer of the surplus products which formerly lay a comparatively valueless load upon his land. It has made the raising of grain less profitable for the farmers of this locality, but it has opened up markets in the north of Europe for their fruits, and new and improved methods are at hand for preserving and drying fruit. In the last few years much has been done in Hesse in the way of a more intelligent cultivation of fruit, and the exportation of fruit from the Duchy has grown in importance.

* A centner = 110½ pounds avoirdupois, or almost a hundred weight.

Almost every part of the Duchy, as said above, is favorable to the growth of fruit trees. Of the larger kinds of fruit, cherries, apricots, pears, and plums grow best. Apples also grow well, but not, in my opinion, up to the American standard. Peaches do not succeed well. Of the smaller fruits, strawberries, raspberries, currants, and gooseberries, &c., grow splendidly. The blackberry ripens here, but is seldom met with. For fine table fruit, the towns of this vicinity afford good markets. Melons do not do well. The almond, the hazel, and the "English walnut" trees grow well.

Inclosure 2 to this dispatch shows the number of fruit trees in Hesse in 1884, the crops they gave, and the value thereof.

Around Mayence the culture of the grape and traffic in its product may be said to be the chief occupation of the people. For hundreds of years has the grape vine been tenderly nurtured upon the banks of the Rhine, from the time when the Romans lay encamped here, viewing the barbarous hordes to the north of them. The very best wines, it is true, are produced on the other side of the Rhine, in Prussian territory, but those of the left bank of the river are not far behind them in excellence. The Riesling grape is the favorite sort now, and has taken the place of the famous Orleans variety, which used to be much planted in the Rhinegau and in the better vineyards of Rhine-Hesse, and to which the Rhine wine of to-day owes its reputation, and which has given place in consequence of its late ripening to the Riesling. In the poorer vineyards on the low lands the grape known as the Oestricher is the one most cultivated. It gives a larger product than the Riesling, and suffers less from the sour worm, and in the vineyards situated away back from the Rhine, where the soil is heavy, a sort called the Kleinberger is grown, which gives a large crop of grapes, but of poor quality. Other kinds are planted, but not many comparatively.

Cattle-raising is of respectable proportions, especially for neat cattle and swine, but Hesse does not raise enough for its own needs. The old Hessian species of neat cattle were good, but have deteriorated. Efforts have been made in recent years to improve the old native stock by introducing cattle from Switzerland and crossing them with the old breeds, but no very satisfactory results have yet been reached.

Inclosure 3 to this dispatch shows the number of horses and cattle in Hesse in 1883, and their value, with other interesting information.

Hesse does not produce more than about half as much milk as it requires, and consequently has to rely largely upon other states for its butter, cheese, &c.

To meet the amount of beef required by its inhabitants, about 7,500 oxen have to be imported into the Duchy annually, with a net weight, when slaughtered, of about 1,500 pounds per animal.

The breeding of swine, notwithstanding its great importance for a land like Hesse, where there is such a multitude of owners of small and medium-sized parcels of land, is by far not what it ought to be. Swine could, and ought to be, raised to a much greater extent than they are in the Duchy; and on the small farms could, I dare say, be supported on much that now goes to waste. The swine of Hesse are also much in need of improvement, and it is very necessary that the standard of the pig of the Duchy should be raised if it is going to compete in future with the fine animal of our western hemisphere. It is calculated that a German requires about 100 pounds of swine flesh a year, which estimate would make Hesse need about 475,000 centners of pork a year; but Hesse raises only about 255,000 centners per annum, so that there is a deficit of about 220,000 centners (24,531,000 pounds avoirdupois).

The rearing of sheep, in comparison to that of other farm animals, is of slight importance in Hesse, as sheep, owing to the manner in which farm land is divided up, have given place, more and more, in Starkenburg and Rhine-Hesse, to the breeding of neat cattle. Only in the Vogelsberg and in a part of the Odenwald does sheep-raising still hold its ground.

Goat-raising is a subject of some importance in Hesse, where the goat is often the sole animal owned by a poor family, whose loss is to them as great an affliction as the death of a cow is to a large farmer.

In horse-breeding not much is done, I believe.

Mining is only of importance in Upper Hesse. The minerals obtained are pit coal, iron ore, and maganese. Salt is made from mineral springs at various places.

The Grand Duchy is, in the first place, an agricultural state. Even the mechanics in the villages and small towns, as well as tradesmen, carry on a bit of gardening or farming, a good deal of the labor connected therewith being often done by their wives and children. The population of Hesse can therefore not very well rise above a certain height, and the surplus population, as is now the case, must seek other fields of activity in other parts of Germany, or emigrate. In comparison to other states of Germany the emigration from Hesse to foreign countries is as eighteen to fourteen—that is, eighteen persons from Hesse to fourteen from the Empire at large; furthermore the geological and orographical conditions of Hesse are not favorable to the development of an iron industry. It is not rich in minerals. Foreign raw iron and old iron are worked up in the Eastern Odenwald, but the industry, it is said, will never amount to anything, because there is a lack of coal and the water-power is too variable and unreliable. In the Vogelsberg, too, raw foundry and machine iron are manufactured, but are mostly made from ore from other parts. Here also there is a lack of coal, and the streams which are strong at certain seasons of the year are weak in power at others. There is also a lack of railroads, as the roads travel around the Vogelsberg. In the Rhine Main Valley and in Rhine-Hesse the rivers Main and Rhine, as well as railroads, form highways of intercourse, but the earth grants no raw stuff, which, however, could be easily imported, but there is a dearth of coal, which enhances the costs of manufacturing, and sets a limit to the extension of foundries and furnaces.

The factories of Rhine-Hesse and of the neighboring states call for many hands, and there is consequently a demand for farm hands.

What they produce the farmers of Hesse, I understand, are able to sell readily, as towns are plentiful hereabouts, but the markets for agricultural products are not large, because the products of the farms are bought up by traveling dealers or middle men. The chief market for Hesse is Frankfort-on-the-Main.

The chief cities of Hesse are Mayence, with a population of 65,701; Darmstadt, the capital city, with a population of 43,149; Offenbach, with a population of 31,735; Worms, with one of 21,927; and Giessen, with one of 19,001. Small towns are numerous, or rather villages.

The Rhine-Main Valley in Starkenburg is in general to be described as a strip of land with a mild South German climate, which, in consequence of the influence of the Odenwald, the rivers Rhine and Main, and the great number of its forest trees, is very much subject to storms and fogs. That part of the plain which is free of forest trees, lying between the Rhine and the Bergstrasse, suffers from dryness in summer, because the vapors and storms after passing the Rhine rush with pre-

cipitation to the Bergstrasse. The Odenwald has, with few exceptions, a very nice, mild mountain climate. In its western part, known as the Bergstrasse, the grape and almond flourish. Upper Hesse has a more northerly climate, and the Vogelsberg is raw. Rhine-Hesse, poor in water, and almost devoid of forest trees, is a warm vineland, whose soil and atmosphere become very warm in summer during the day and cool off quickly at night. Certain heights and plateaus suffer from wind. Meteorological observations made by certain gentlemen at six different places in Hesse during the years 1866 to 1879—that is, for fourteen years—showed the following average results:

The highest average temperature was at Darmstadt, in Starkenburg, $+8.005^{\circ}$ Réaumur for the year, $+1.31^{\circ}$ in winter, $+7.79^{\circ}$ in spring, $+15.00^{\circ}$ in summer, and $+7.92^{\circ}$ in autumn, and the lowest at Giessen, in Upper Hesse, $+6.840^{\circ}$ Réaumur for the year, $+0.28^{\circ}$ in winter, $+6.62^{\circ}$ in spring, $+13.50^{\circ}$ in summer, and $+6.88^{\circ}$ in autumn. The largest average amount of rainfall per annum was at Michelstadt, in Starkenburg, 84.75 c. c. m. for the year, 17.80 c. c. m. in winter, 18.34 in spring, 25.82 in summer, and 22.29 in autumn, and the lowest at Pfeddersheim, in Rhine-Hesse, 48.58 c. c. m. for the year, 9.62 c. c. m. in winter, 9.83 in spring, 17.83 in summer, and 11.25 in autumn. The largest number of rainy days on the average was at Darmstadt, 181.04 per annum, 39.40 in winter, 47.14 in spring, 49.01 in summer, 45.50 in autumn, and the smallest number at Monsheim, in Rhine-Hesse, 137.93 per annum, 27.80 in winter, 35.43 in spring, 39.70 in summer, and 35 in autumn. The largest number of days on which snow fell was at Giessen, 27.28 for the year, 18 in winter, 6.08 in spring, none in summer, and 3.80 in autumn; the smallest number at Monsheim, 19.53 for the year, 11.70 in winter, 4.90 in spring, none in summer, and 2.93 in autumn. State of the barometer, direction of wind, and relative moisture of the air were observed only at Darmstadt.

CUSTOMARY TENURE OF LAND.

I understand that nine to twelve years is the chief length of time for which farm land is rented. The rent is paid in money, in two installments, usually made semi-annually. Formerly it was very customary to pay land rent in natural products, but as it was a rather unsatisfactory mode of settlement, and brought about constant disputes, the payment of money is preferred, and now generally adopted. It was formerly the practice, too, to pay farm laborers in natural products, the thrasher, for instance, the fourteenth part of the thrashed grain.

In reply to a note addressed by me to it, in which I asked the length of time for which agricultural land is usually rented, the Grand Ducal Government says, in substance, that in regard to the time for which farm land is rented in Hesse and the rate of rent paid per hectare, no average comparative statement can be made, as the circumstances under which the leases are made, in view of the different character and uses of the soil and great differences in the size of the parcels let, are so very diverse that it is impossible to do so. The minister of state could not, therefore, give a general answer to my inquiry, but had to confine himself to land belonging to the state, which, he says, so far as it is rented in scattered parcels,* is let for nine to twelve years, but the

* In this country it often happens that a farmer, instead of having one solid tract of land, has a piece here and a piece there, with property of another interposed between.

large undivided tracts for eighteen years. The average rent paid is 75 marks (\$17.85) a hectare (2.47 acres).

GENERAL CONDITIONS OF LABOR.

Farming cannot be said to be conducted on the most advanced principles, or to be done after very primitive fashions. The smallness of the farms in Hesse, taken as a whole, does not permit of farming under such conditions as prevail in the United States, and does not call into activity the most improved agricultural machinery; but, still, farming is carried on intelligently and with good tools and implements. As has been remarked, the land is very much cut up into small parcels and worked by a multitude of proprietors, and it can well be conceived that under such a system hand labor would play an important part. The general condition of those who labor on farms is said to be good.

DESCRIPTION OF TOOLS.

The great body of hand implements employed by civilized nations in farming are in use in Hesse, such as scythes, forks, hoes, rakes, spades, &c. Many of these have been imported from America, and the American articles are still in demand and preferred by some to the German imitations of American agricultural implements. Many of these implements, too, are obtained from England.

KIND OF MACHINERY.

Agricultural machinery is but little employed, comparatively speaking. Of thrashing-machines, almost every village has one or two. Sowing-machines are not used by the small farmers; their seed they scatter broadcast with the hand. Of steam-plows there is only one in this neighborhood, I believe. Steam mowers and thrashers are used to some extent, and also machines for chopping up fodder, run by hand. Machines for cleaning grain are in use, constructed, on the American style. There are about 1,000 machines to be met with in Hesse, I am informed, for cutting fodder, and machines for cutting up sugar-beets are also in use. The first work very well, but the latter are said to be very much in need of improvement. The Cambridge roller and Howard harrows are often seen. Ten years ago mowing-machines were considerably employed, but less so now. No practical grass-mowing machines are to be found. Hay binders are entirely unknown. Horse-rakes are in general use. Machines of German manufacture for sorting potatoes are in use, but are said to be impracticable. Machines for mashing potatoes are good. Machines for drying fruit are coming into use, and thus much fruit which formerly went to waste is preserved. The machines, or evaporators, I understand, are constructed upon the American system, but in a modified way, to get around American patents. Iron presses for grapes and for making cider from fruit are somewhat used, but the wooden presses are preferred for grapes, because it is feared that the iron ones would affect the color of the wine. The machines employed for pressing apples are considered good and practical. Groat-mills are in use, but are not regarded as satisfactory. For draining land, what are termed *centrifugers* are used here, and seldom pulsometers. The American wind motors or machines are looked upon with favor, and are said to have a future before them. Plows, rakes, &c., drawn by horses are, of course, in general use.

LABORERS' WAGES.

So far as I can learn, the laborers on the farms in this consular district receive pretty fair wages. There is a lack of farm hands in Hesse, it is said, due to the calls made by the factories of the Duchy and of neighboring states for workmen. It is impossible for me to set forth the general condition of the farm laborer throughout the Duchy, and give his average wages, as the circumstances under which he is employed and the character of the land differ so variously in the divers districts that no general statement can be made. In this vicinity the ordinary farm laborer is paid 1.50 to 2 marks (35 to 47 cents) a day in summer, and 1.30 to 1.60 marks (30 to 38 cents) a day in winter, without board. Women earn on the average about \$1.50 a week. Where food and shelter are furnished the men they get from 4 to 6 marks (95 cents to \$1.50) a week. A good deal of work is done by the piece; all that can be is so done, I believe. Employés generally receive their wages weekly, in money. In the vineyards, when the season is at its height, better wages are paid, and even in the fields in harvesting time the laborers get more. The hours of labor are from 7 a. m. to 5 p. m. in winter and 5 a. m. to 7 p. m. in summer. At midday a rest of one hour and a half is allowed, and in the forenoon, at 9 o'clock, a resting pause of half an hour is taken. Last year farm hands did not get as good wages as they did three or four years ago, as the farmers realized lower prices in 1885 for their crops. These depressed prices in this region are due to good harvests, and not from competition from abroad, it is thought.

SUBSISTENCE OF LABORERS.

They are not so well nourished, I should say, as English laborers, and much less so than American. Their food consists principally of bread, cheese, milk, potatoes, coffee, &c. Each family kills about one to two hogs a year. They raise goats, chickens, and geese, which help them along. Beer and wine are the chief beverages. Schnapps is said to be little drunk by the Hessian farm hands. In the Odenwald the well-to-do peasant enjoys much salted and dried meat, and good food made of flour, while the day laborer keeps himself alive principally with potatoes, from which a flour is also made. Wine is to be got almost everywhere. In the Vogelsberg the people are mostly shepherds in summer, and in winter they are engaged in their little houses spinning, weaving, or carving. It is hard to get there anything from the soil. The food partaken is of a very simple nature. Milk and eggs, even with the wealthy, take the place of meat. Sauerkraut and potato or millet purée, with dried meat, are Sunday food in winter. The butter made is almost all sold, and what they receive for it the peasant women apply to household expenditures and taxes. Throughout Hesse it usually costs what the farm hands earn to live. The most of them in this consular district own the houses in which they dwell. These are generally one story in height, built of brick, with tile roofs, and contain from two to three rooms, with a kitchen. Oftentimes the house is of wood, ornamented with brick-work. Unburnt bricks have been in former times much used, but along the Rhine, where the country is subject to inundations, the building of houses with unburnt brick is forbidden by law. The yard is generally small, and has in it commonly a small stable for two to four goats and a pig. To the house a small garden is usually attached, where fruit and flowers and vegetables are cultivated. The cow stable is generally pretty good, but the goat and pig pens or

stables badly kept. For food a good deal of sauerkraut and preserved beans are used by the laborers. The coffee they drink is half chicory; for sweetening, I believe, they employ powdered beet-roots. Their daily bread is made of rye flour, but rye and barley are often mixed. Wheat bread is not used in the country. Cake and meat they have only on holidays. They sleep between feather beds, one above and one underneath. The feathers they get from the geese they raise. Shoes are worn rather than boots. None except children are seen barefoot in summer, thus differing from some other parts of Germany. The peasants seem to be generally pretty well clothed. Their produce they usually carry to market on their heads instead of on their backs. The rooms in which they dwell are generally severely plain, a table, a bench, chairs, a clock on the wall, and good beds being, as a rule, the furniture of a house, with a few flowers placed in the rooms in summer to brighten things up.

An experienced farmer has reckoned out for me that a farm hand with a wife and two children will spend in the course of a year, for dwelling,* 60 marks (\$14.28); for clothing, 54 marks (\$12.85); for light and fuel, 52 marks (\$12.37); for bread, 160 marks (\$38.08); for meat, 45 marks (\$10.71); for butter, 40 marks (\$9.52); for cheese, 25 marks (\$5.95); for coffee, 48 marks (\$11.42); for schnapps and beer, 10 marks (\$2.38); for taxes, 20 marks (\$4.76); for fish, tea, milk, eggs, vegetables, fruit, and sugar nothing is spent. This makes a total expenditure of \$122.32 per annum. A farm laborer, it has been said, is paid from 35 to 47 cents a day. Steady employment throughout the year, exclusive of Sundays, would make his income, at 35 cents a day, \$109.55, and at 47 cents a day, \$147.11; but he gets 47 in summer, and 35 cents in winter, thus making his income hardly sufficient for his needs. The wife and children often earn a little something extra.

Another farmer has made out the following estimate for me, in the case of a man and wife and four children: For dwelling,* 50 to 60 marks (\$11.90 to \$14.28); for clothing, 60 marks (\$14.28); for bread, 140 marks (\$33.32); for meat (beef), 15 to 20 marks (\$3.57 to \$4.76); for butter, 52 marks (\$12.37); for cheese, 40 marks (\$9.52); for coffee, 30 marks (\$7.14); for milk, 10 marks (\$2.38), beyond what two to three goats supply; for sugar, 10 marks (\$2.38); for vegetables, 40 marks (\$9.52); for fruit, 8 marks (\$1.90); for spices, 6 marks (\$1.42); for schnapps, at least 3 marks (71 cents); and for wine and beer up to 12 marks (\$2.85). Once a year a hog raised by the family is slaughtered, worth \$25. This estimate would make the yearly expenditure from \$113.26 to 116.83, without allowing for taxes and fuel and light.

It is a very difficult matter to get hold of a man who can accurately say just what each kind of food or wearing apparel costs him year in and year out.

COST OF LABOR.

This point I cannot answer, as desired by the Department. The Government at Darmstadt says that material is wanting to make even an approximate reckoning. The costs of production of one centner (110½ pounds) of wheat or rye amount to about 8 marks (\$1.90), one farmer informs me, and of potatoes 1 mark 25 pfennigs (25 cents) a centner. For harvesting grain another says 3 to 4 marks (71 to 95 cents) a quarter of a hectare (about five-eighths of an acre) is usually paid, with 8 to

* Where rent is paid.

10 centners of wheat and rye and barley on the average, and 10 of oats, making the cost 50 to 60 pfennigs (10 to 14 cents), including other expenses, the centner. Potatoes cost 20 pfennigs (4½ cents) a centner. A third gentleman says that field working costs 46 marks (10.95) a hectare, (2.47 acres). The harvesting of grain costs 40 marks (\$9.52) a hectare; of bulbous plants 45 marks (\$10.71), including putting them under roof, but not the thrashing.

MODE OF MILLING OR PREPARING GRAIN FOR MARKET.

Grain, I am informed, is only so far prepared by the producer for the market that it is cleansed by him so that it can be used by the miller without undergoing a second cleaning. The general mode of milling is what is called the high milling method, by which the grain is first ground coarsely into grits, out of which the bran is removed by machinery, and then these grits are ground into fine flour by French flint millstones, or by machine steel rollers, the latter being generally in use in the larger mills. There are said to be in general no large mills in this neighborhood, except at three or four places, where 12 to 15 men are thought to be employed, and where the amount of grain ground is about 200 sacks daily. The most of the mills are doing customer work, besides commercial business—a great many of them only the farmer, with one to five or six hands at work. The millers usually get their grain from dealers. The farms are, as a class, not large enough to pay for the trouble of selling their grain to the millers. Milling in Germany has made great progress in the last fifteen years. A great deal of improved machinery is in use now which was unknown previous to that time, but the business is not on the whole profitable. The small mills cannot compete with the large ones doing a commercial business. Wheat is generally milled in three numbers—No. 1, with 38 to 40 per cent.; No. 2, with 20 per cent.; No. 3, with 14 to 15 per cent. flour, the remainder being used for fodder. Rye goes through three grindings, and the quality of the flour is brought about by mixing the different grindings together. There are four qualities, 0, 01, 1, and 2. No. 1 is the first milling. No. 01 is produced by mixing a large quantity of the first milling with a small quantity of the second. No. 1 is made by mixing a small quantity of the first and a large quantity of the second milling. No. 3 is a mixture of the second and third millings, whose quality is made according to the wish of the receiver. In general, 67 to 68 per cent. of flour is obtained. The rest is used for fodder.

TAXES.

The Grand Ducal Government informs me that the agriculturist pays no special taxes as such. All real estate in the Duchy pays a valuation tax, which is the same for farm land as for other property. If the farmer is a capitalist or conducts some other business in connection with that of farming, he has an income-tax to pay, both local and State. The taxes paid upon real estate and upon incomes vary so greatly in the different districts of the Duchy that the Ducal Government says it is impossible to set them forth. The height of the direct tax levied by the State is fixed by law for each fiscal period. For the year 1885 to 1888 it is 15 pfennigs (3½ cents) upon each mark of taxable valuation on real property, and 17 pfennigs (4 cents) upon business property, incomes, and personal property.

EXPORTATION OF FARM PRODUCTS.

Hesse is not an exporter of farm products, as has been remarked in the course of this dispatch, but rather an importer.

JAS. HENRY SMITH,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Mayence, May 11, 1886.

[Inclosure 1 to dispatch 230.]

Acres of grain, potatoes, leguminous plants, &c., under cultivation in Hesse in 1884, and the product thereof.

WHEAT.

Provinces.	Acres cultivated.	Grain.		Straw.	
		Per acre.	Total.	Per acre.	Total.
<i>Winter.</i>					
Starkenbourg	16,415.76	<i>Cwt.</i> 10.6	<i>Cwt.</i> 175,078.96	<i>Cwt.</i> 17.1	<i>Cwt.</i> 281,228.64
Upper Hesse	57,514.60	11.0	635,876.92	17.4	1,000,879.88
Rhine-Hesse	19,789.29	13.1	260,589.84	23.2	459,251.52
Total	93,699.65	11.4	1,071,545.72	18.6	1,741,360.14
<i>Summer.</i>					
Starkenbourg	205.84	9.1	1,871.80	16.5	3,398.64
Upper Hesse	614.31	9.5	5,883.92	14.3	8,829.80
Rhine-Hesse	107.49	13.5	1,454.32	17.3	1,867.88
Total	927.64	9.9	9,210.04	15.2	14,096.32

SPELT.

<i>Winter.</i>					
Starkenbourg	15,976.40	10.6	169,261.68	13.5	215,535.32
Rhine-Hesse	250.81	19.0	4,778.49	25.4	6,373.92
Total	16,227.21	10.7	174,040.16	13.6	221,909.24
<i>Summer.</i>					
Starkenbourg	4.94	6.3	31.36	15.8	78.40

RYE.

<i>Winter.</i>					
Starkenbourg	51,390.97	7.5	389,073.72	18.7	964,041.68
Upper Hesse	55,108.24	7.6	421,149.12	16.2	1,054,534.88
Rhine-Hesse	51,287.68	9.3	478,151.80	28.5	1,460,737.04
Total	157,786.89	8.1	1,288,374.64	22.0	3,479,313.60
<i>Summer.</i>					
Starkenbourg	947.17	7.1	6,781.60	15.0	14,243.32
Upper Hesse	244.63	6.1	1,501.36	15.9	3,902.86
Rhine-Hesse	9.88	4.7	47.04	4.7	47.04
Total	1,201.68	6.9	8,330.00	15.1	18,192.72

Acres of grain, potatoes, leguminous plants, &c., under cultivation in Hesse, &c.—Cont'd.

BARLEY.

Provinces.	Acres cultivated.	Grain.		Straw.	
		Per acre.	Total.	Per acre.	Total.
<i>Winter.</i>					
Starkenbourg	220.66	<i>Cwt.</i> 10.0	<i>Cwt.</i> 2,220.68	<i>Cwt.</i> 10.2	<i>Cwt.</i> 2,246.16
Upper Hesse	1,057.63	12.3	13,045.76	8.5	8,992.48
Rhine-Hesse	5,622.74	16.9	95,236.40	15.3	86,265.48
Total.....	6,901.04	16.0	110,502.84	14.1	97,504.12
<i>Summer.</i>					
Starkenbourg	37,879.34	12.4	502,438.16	13.4	503,857.16
Upper Hesse	48,120.22	10.6	511,463.96	11.5	555,107.28
Rhine-Hesse	47,360.85	14.4	684,234.04	16.0	756,418.86
Total.....	132,860.41	12.7	1,698,136.16	13.6	1,815,483.32

OATS.

Starkenbourg	82,013.59	10.1	324,579.92	11.6	372,037.40
Upper Hesse	56,783.90	10.5	596,506.40	12.0	681,917.32
Rhine-Hesse	14,000.01	13.8	193,814.60	15.9	222,846.12
Total	102,797.50	10.8	1,114,900.92	11.4	1,276,800.84

BUCKWHEAT.

Starkenbourg	1,258.03	5.2	6,518.96	9.1	11,423.76
Upper Hesse	12.35	4.7	70.56	8.2	101.92
Total	1,270.38	5.2	6,589.52	9.1	11,530.68

PEAS.

Provinces.	Total acres culti- vated.	Acres grown for green fodder.	Peas.		Straw.	
			Per acre.	Total.	Per acre.	Total.
			<i>Cwt.</i>	<i>Cwt.</i>	<i>Cwt.</i>	<i>Cwt.</i>
Starkenbourg.....	460.61	1.23	5.8	2,667.56	6.8	3,136.00
Upper Hesse.....	10,192.29	1,496.61	7.2	62,566.52	9.7	99,816.92
Rhine-Hesse.....	137.88	13.59	7.7	960.40	7.8	1,087.80
Total.....	10,790.78	1,501.43	7.1	66,224.48	9.6	104,040.72

HOG BEANS.

Provinces.	Acres cul- tivated.	Beans.		Straw.	
		Per acre.	Total.	Per acre.	Total.
		<i>Cwt.</i>	<i>Cwt.</i>	<i>Cwt.</i>	<i>Cwt.</i>
Starkenbourg.....	407. 73	5. 6	2, 291. 24	5. 6	2, 281. 44
Upper Hesse.....	287. 14	7. 4	2, 144. 24	8. 1	2, 344. 16
Rhine-Hesse.....	152. 71	7. 4	1, 130. 92	6. 5	985. 86
Total.....	847. 58	6. 5	5, 566. 40	6. 6	5, 611. 46

Acres of grain, potatoes, leguminous plants, &c., under cultivation in Hesse, &c.—Cont'd.

VETCHES.

Provinces.	Total acres cultivated.	Acres grown for green fodder.	Beans.		Straw.	
			Per acre.	Total.	Per acre.	Total.
			<i>Owt.</i>	<i>Owt.</i>	<i>Owt.</i>	<i>Owt.</i>
Starkenburger	1,682.81	676.58	6.4	6,471.92	9.9	16,666.88
Upper Hesse	2,614.42	880.45	7.0	12,281.36	10.4	27,424.32
Rhine-Hesse	792.72	679.30	6.8	782.04	19.0	15,101.80
Total	5,089.95	2,236.33	6.8	19,535.32	11.6	59,193.00

LUPINES.

Provinces.	Acres grown for under-plowing.	Acres cultivated.	Fodder, &c.			
			Lupines.		Straw.	
			Per acre.	Total.	Per acre.	Total.
			<i>Owt.</i>	<i>Owt.</i>	<i>Owt.</i>	<i>Owt.</i>
Starkenburger	4,179.12	4,17.36	10.7	4,466.84	8.5	3,545.64
Upper Hesse	118.86	16.06	14.0	225.40	12.2	196.00
Rhine-Hesse .....	.....	19.76	6.3	125.44	9.5	188.16
Total	4,297.48	4,53.18	10.6	4,817.68	8.6	3,929.80

POTATOES.

Provinces.	Acres cultivated.	Entire product.		Quantity diseased.	
		Per acre.	Total.	Per acre.	Total.
		<i>Owt.</i>	<i>Owt.</i>	<i>Owt.</i>	<i>Owt.</i>
Starkenburger	72,752.64	94.5	6,879,464.76	0.9	65,918.72
Upper Hesse	52,188.45	110.4	5,760,783.00	4.0	212,701.16
Rhine-Hesse	40,790.69	79.9	3,261,300.84	2.7	112,754.88
Total	165,726.78	95.9	15,901,548.60	2.8	391,374.76

BET ROOTS FOR FODDER.

Provinces.	Acres cultivated.	Per acre.	Total.
		<i>Owt.</i>	<i>Owt.</i>
Starkenburger	23,678.08	183.5	4,345,792.36
Upper Hesse	19,356.62	174.1	3,371,335.24
Rhine-Hesse	11,968.77	233.3	2,792,470.80
Total	550,034.47	191.7	10,509,598.40

OTHER ROOTS (CARROTS AND TURNIPS).

Starkenburger	14,673.74	89.2	1,488,316.20
Upper Hesse	6,079.89	120.8	731,683.68
Rhine-Hesse	10,919.64	160.2	1,749,562.64
Total	33,673.17	118.9	3,969,562.52

Acres of grain, potatoes, leguminous plants, &c., under cultivation in Hesse, &c.—Cont'd

RAPESEED.

Provinces.	Acres cultivated.	Per acre.	Total.
<i>Winter.</i>			
Starkenburg	1,423.35	<i>Qwt.</i> 7.3	<i>Qwt.</i> 10,456.00
Upper Hesse	2,822.47	6.0	17,124.52
Rhine-Hesse	1,651.43	16.3	27,032.32
Total	5,897.25	9.2	54,613.44
<i>Summer.</i>			
Starkenburg	327.17	3.7	1,225.00
Upper Hesse	528.07	4.4	2,318.68
Rhine-Hesse	9.88	13.3	131.32
Total	865.12	4.2	3,675.00

HOPS.

Starkenburg	124.29	9.4	1,170.12
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CLOVER FOR SEED AND FODDER.

Provinces.	Acres cultivated.	Acres grown for seed.	Seed.		Hay.	
			Per acre.	Total.	Per acre.	Total.
Starkenburg	21,652.51	2,045.57	<i>Qwt.</i> 2.7	<i>Qwt.</i> 5,568.36	<i>Qwt.</i> 35.5	<i>Qwt.</i> 770,332.92
Upper Hesse	29,521.49	1,150.54	2.1	2,530.36	34.6	1,022,279.16
Rhine-Hesse	12,233.42	1,684.05	4.4	7,546.00	37.2	455,937.16
Total	63,407.42	4,880.16	3.2	15,644.72	35.4	2,248,549.24

LUCERN.

Provinces.	Acres cultivated.	Hay.	
		Per acre.	Total.
Starkenburg	6,582.02	<i>Qwt.</i> 37.6	<i>Qwt.</i> 247,753.80
Upper Hesse	5,425.43	40.7	139,642.16
Rhine-Hesse	12,102.70	42.1	509,750.92
Total	22,110.15	40.5	897,146.88

ESPARCET.

Starkenburg	1,499.21	30.8	46,232.48
Rhine-Hesse	24,153.51	38.2	922,875.80
Total	25,652.72	37.7	969,108.28

Acres of grain, potatoes, leguminous plants, &c., under cultivation in Hesse, &c.—Cont'd.

OTHER PLANTS FOR FODDER (SERRADELLA,* SPURRY, AND GRASS SEED OF ALL KINDS).

Provinces.	Acres cultivated.	Hay.	
		Per acre.	Total.
Starkenburger	1,734.71	Owt. 32.5	Owt. 56,385.28
Upper Hesse	752.44	28.0	21,064.12
Rhine-Hesse	577.00	29.2	16,888.44
Total	3,064.15	80.7	94,332.84

* This is a plant which grows well where clover will not grow at all, or hardly do so, such as upon sandy and heathy soil. In Germany it is also known by the name of bird's-foot clover, but the English designation of the plant I do not know. The botanical name is *Ornithopus sativus*. It is said to be an excellent plant for neat cattle.

PASTURE LAND.

Provinces.	Acres.	Hay, aftermath, &c.	
		Per acre.	Total.
Starkenburger	87,421.83	Owt. 83.3	Owt. 2,826,443.48
Upper Hesse	183,806.11	29.3	3,890,788.92
Rhine-Hesse	18,799.61	28.5	898,419.04
Total	285,027.55	80.4	7,150,646.44

The number of productive fruit trees, by provinces, in Hesse in 1884, and the quantity of fruit yielded by each sort.

Provinces.	Apples.			Pears.			Plums and damsons.			Cherries.		
	Fruit-bearing trees.	Amount of fruit.		Fruit-bearing trees.	Amount of fruit.		Fruit-bearing trees.	Amount of fruit.		Fruit-bearing trees.	Amount of fruit.	
		Value.			Value.			Value.			Value.	
Starkenburger ..	300,086	Owts. 183,775	\$164,507	137,137	Owts. 34,595	\$28,419	255,145	Owts. 2,602	\$3,262	37,037	Owts. 3,183	\$4,953
Upper Hesse ..	292,212	152,880	129,977	111,169	18,151	13,177	317,444	10,595	10,487	62,992	3,837	6,748
Rhine-Hesse ..	162,801	36,575	39,239	54,215	19,225	19,300	225,788	4,229	4,385	36,495	13,030	27,479
Total	755,099	373,230	333,723	302,521	71,971	60,896	798,417	17,426	18,144	136,524	20,050	39,180

Provinces.	Apricots and peaches.			Edible chest-nuts.			Walnuts.			Grand total.		
	Fruit-bearing trees.	Amount of fruit.		Fruit-bearing trees.	Amount of fruit.		Nut-producing trees.	Quantity of nuts.		Bearing trees.	Product.	
		Value.			Value.			Value.			Value.	
Starkenburger ..	4,274	Owts. 519	\$816	1,093	Owts. 88	\$139.61	925	Owts. 5,582	\$10,620	796,697	Owts. 230,847	\$212,718
Upper Hesse ..	1,085	78	157	151	5	811,046	1,264	2,508	796,139	186,813	163,066	
Rhine-Hesse ..	11,610	3,792	14,237	822	33	77,20	528	7,601	17,639	511,759	84,577	122,369
Total	16,969	4,289	15,210	1,566	126	224,93	499	14,537	30,767	2,104,595	501,737	468,151

Number of horses, bees, sheep, &c., in the Grand Duchy of Hesse, by provinces on the 10th day of January, 1883.

Provinces.	Colts.		Horses three years old and upwards.					Mules.	Asses.
	Less than one year old.	From one to three years old.	Breeding stallions.	Horses used for farm work partly or wholly.	All other horses.	Total number three years old and upwards.	Total number of horses.		
Starkenburger	669	1,412	61	12,775	4,269	17,105	19,186	11	105
Upper Hesse	485	1,051	1	8,017	3,125	12,143	13,679	4	142
Rhine-Hesse	164	474	.....	11,487	2,556	14,043	14,681	7	18
Total	1,318	2,937	62	33,279	9,950	43,291	47,546	22	265

Provinces.	Young cattle.		Cattle two years old and upwards.				Total head of neat cattle.
	Calves less than six months old.	Young cattle six months to two years old.	Breeding bulls.	Other steers and oxen.	Cows.	Total two years old and older.	
Starkenburger	13,064	22,806	762	2,656	58,429	61,847	97,717
Upper Hesse	18,054	30,953	979	6,413	73,012	89,404	129,421
Rhine-Hesse	6,067	10,559	849	1,199	43,793	45,341	61,967
Total	37,185	64,328	2,090	10,268	175,234	187,592	269,105

Provinces.	Fine wool sheep.		Sheep of improved flesh.		All other kinds.		Total.
	Lambs not one year old.	One year old and older.	Not one year old.	One year old and older.	Not one year old.	One year old and older.	
Starkenburger	186	197	39	465	4,295	19,906	25,088
Upper Hesse	108	311	958	1,613	14,506	57,472	74,868
Rhine-Hesse .....	.....	.....	.....	3	436	1,168	1,607
Total	294	508	997	2,081	19,237	78,546	101,653

Provinces.	Swine.				Goats, including kids and bucks.
	Not one year old.	Breeding sows.	Other swine.	Total.	
Starkenburger	63,251	7,525	7,371	78,147	42,165
Upper Hesse	45,587	7,521	10,870	63,978	21,344
Rhine-Hesse	15,872	800	4,123	20,795	30,137
Total	124,710	15,846	22,364	162,920	93,646

The average value of the aforementioned animals per head was as follows:

Horses:	
Less than one year old.....	\$39 74
From one to three years old.....	88 17
Breeding stallions.....	1,399 00
All other horses three years old and upwards.....	116 38
Average value of all horses, young and old.....	114 00
Mules.....	22 37
Asses.....	13 80
Neat cattle:	
Calves less than six weeks old.....	9 04
Calves from six weeks to six months old.....	16 42
Young cattle from six months to two years old.....	35 23
Breeding bulls.....	71 87
Other steers and oxen.....	72 82
Cows.....	62 83
Average value of animals two years old and upwards.....	63 54
Average value of all kinds, young and old.....	50 93
Sheep:	
Fine wool lambs less than one year old.....	4 28
Fine wool sheep one year old and older.....	7 14
Improved fleash, lambs less than one year old.....	4 76
Improved fleash, sheep one year old and older.....	6 42
All other kinds, lambs less than one year old.....	3 80
All other kinds, sheep one year old and older.....	5 23
Average value of all kinds together, young and old.....	4 99
Swine:	
Less than one year old.....	10 94
Breeding sows.....	25 22
Other swine, one year and older.....	22 84
Average value of all kinds, young and old.....	14 04
Goats, including bucks and kids.....	8 09

The average live weight of the neat cattle and of the swine one year old and older per head was as follows:

Pounds.

Neat cattle:	
Calves less than six weeks old.....	116
Calves from six weeks to six months old.....	187
Young cattle, from six months to two years old.....	453
Animals two years old and upwards.....	880
Steers and oxen.....	957
Cows.....	853
Average weight of all kinds, young and old.....	682
Swine:	
One year and older.....	242

Different kinds of animals in 1883 as compared to 1873.

Provinces.	Horses.		Mules and asses.		Cattle.		Sheep.		Swine.		Goats.	
	1883.	1873.	1883.	1873.	1883.	1873.	1883.	1873.	1883.	1873.	1883.	1873.
Starkenbug.....	19,186	18,540	116	168	97,717	97,494	25,088	19,158	78,147	57,376	42,185	32,530
Upper Hesse.....	13,679	12,287	146	269	129,421	127,026	74,968	109,452	63,978	57,684	21,344	20,861
Rhine-Hesse.....	14,681	14,131	25	31	61,967	59,529	1,607	1,800	20,795	18,927	30,137	25,279
Total.....	47,546	44,958	287	468	289,105	284,049	101,663	130,410	162,920	133,987	93,646	78,670

Animals per square kilometer and per 100 inhabitants in the Grand Duchy of Hesse and in the German Empire in 1883 and 1873.

Animals.	Per square kilometer.				Per 100 inhabitants.			
	Duchy of Hesse.		German Empire.		Duchy of Hesse.		German Empire.	
	1883.	1873.	1883.	1873.	1883.	1873.	1883.	1873.
	<i>Head.</i>	<i>Head.</i>	<i>Head.</i>	<i>Head.</i>	<i>Head.</i>	<i>Head.</i>	<i>Head.</i>	<i>Head.</i>
Horses.....	6.2	5.8	6.5	6.2	5.1	5.3	7.7	8.2
Neat cattle.....	27.6	27.0	29.2	29.2	30.9	33.3	34.5	38.4
Sheep.....	18.2	17.0	35.5	46.2	10.9	15.3	41.9	60.9
Swine.....	21.2	17.5	17.0	13.2	17.4	15.7	20.1	17.4
Goats.....	12.2	10.2	4.9	4.3	10.0	9.2	5.8	5.7

These tables show that the number of horses, neat cattle, and sheep increased from 1873 to 1883 in a less degree than the population of the Duchy, but showed a higher value in 1883, in proportion to the population, than in 1873. In 1883 the value of the horses and asses, neat cattle, sheep, swine, and goats of the Duchy was reckoned to be 97,646,846 marks (\$23,239,949) against 80,648,130 marks (\$19,194,234) in 1873. The average value per head in 1883 and 1873 was as follows:

Animals.	1883.	1873.
Horses	\$114 00	\$90 00
Mules	22 00	47 00
Asses	13 00	14 00
Neat cattle	50 00	34 00
Sheep	5 00	5 00
Swine	14 00	10 00
Goats	3 00	3 50

It is calculated that if each person in the Duchy had had an equal share in 1883 in the total value of the aforesaid animals the amount would have been 104.29 marks (\$24.82) per capita; in 1873, however, only 94.56 marks (\$22.50), thus showing an increased worth per person of 9.73 marks (\$2.32), or 10.3 per cent.

In the whole German Empire there were in 1883 and 1873 the following number of horses, neat cattle, &c., namely:

Animals.	1883.	1873.
Horses	3, 522, 316	3, 352, 231
Mules	1, 009	1, 626
Asses	8, 786	11, 659
Neat cattle	15, 785, 322	15, 776, 702
Sheep	19, 185, 362	24, 909, 406
Swine	9, 205, 791	7, 124, 068
Goats	2, 639, 994	2, 820, 002

BAVARIA.

REPORT OF CONSUL HARPER.

The manufacturing interests of Munich are not varied or extensive enough to form the basis of a report in full, such as requested.

Augsburg is somewhat of a manufacturing center, but no statistics have been obtained from that place.

The population of Bavaria is principally engaged in agricultural pursuits.

The industries of Munich are chiefly connected with science and the fine arts, which comprise philosophical and optical instruments, paint colors, artists' materials, lithographic stones, gold and silver leaf, &c. It is noted for its five to six thousand beer breweries. It also has some excellent bronze and bell foundries and porcelain manufactories.

There are few, if any, towns in Europe of the same size which contain so many public edifices and institutions devoted to the purposes of art and science as Munich.

UPPER BAVARIA.

AGRICULTURAL STATISTICS.

SOIL.

A clear knowledge of the capabilities of the soil is necessary to rational agricultural management. In the Bavarian mountain territory are found colored sandstone, shell lime, marl, younger second stone for-

mation, granite, marble, and gravel. On the plateaus are found soft marl sand and abundant formations of turf.

SUCCESSION OF LAND.

There is no rule for the succession of land. The owner of the property considers himself free to leave it to whom he chooses, and selects the child whom he has trained for the purpose, or whom he considers most capable. It may be a younger or the youngest son, or a daughter, when the others are in comfortable circumstances.

It is very rarely the property is disposed of by testament. The estate is settled during the owner's life, and he reserves to himself a life interest in cash and board and lodging.

Some arrangement is generally made for the other children by a gift, and often by reserving the right of free board and lodging in old age. These claims are secured by mortgages on the property.

SIZE OF HOLDINGS.

The small and medium properties of from 1 to 10 and from 10 to 40 acres prevail in Upper Bavaria. The first amounts to 44 per cent. and latter to 33 per cent. of the whole.

Only 1,097 families have leases, the Bavarians generally not liking them, as they prefer to be owners. If, however, they have not sufficient capital they are sooner or later ruined. Those who do lease are generally prosperous. The rent can only be stated generally. Larger properties can be leased at \$2.40 to \$5.78 per acre.

FOOD AND WAGES.

The district committees usually value the feeding of a laborer from 19 to 28 cents per day, averaging 23 cents.

The meals consist of, breakfast: bread soup, or milk; dinner: soup, meat, dumplings, or meat and vegetables; supper: cake or biscuits, with vegetables or milk or fruit. In the forenoon and afternoon, bread and weak or strong beer.

Average pay.

Employés.	Present time.	Thirty years ago.
Horse or cattle laborer.....per year..	\$49 08	\$30 04
A woman.....do.....	33 32	20 71
Man:		
Summer.....per day..	47	36
Winter.....do.....	36	23
Woman:		
Summer.....do.....	33	19
Winter.....do.....	23	24

A statement of daily wages will be found in the Journal of the Statistical Bureau for the year 1884, No. 4, pages 302 to 306, inclusive.

FARM IMPLEMENTS.

The farmer often uses only one kind of plow and harrow for all work. The old "country plow," with straight wooden board, which was in gen-

eral use thirty years ago, has disappeared. The plow mostly in use now is one with iron body, vaulted, strip board, and wooden plow cart.

The "one-part wooden roller" is in general use.

The three and four collector iron plows of Eckert & Lack, the Howard harrow, the iron meadow-harrow, and the improved two and three part land rollers are extensively employed.

The machines in use here are two kinds of drill-plows, pick-machines, corn-cleaning, mowing, and steam thrashing machines.

Nearly all the machines used in Bavaria are constructed after well-known American and English models.

CLOTHING AND HOUSING.

The clothes of the men consist mostly of a jacket or suck-jacket, made of sheep's wool, plain long pantaloons, and high-legged boots. In the mountains, pantaloons reaching to the knees and stout lace-shoes.

The women wear linen, cotton, and woolen garments, and sometimes on Sundays and holidays silk.

The under garments are of linen, spun and prepared by the women during the winter.

The laborers, with scarcely any exception, live in their own houses, which are solidly built, very clean, and frequently surrounded by a fruit garden.

Boarding is almost unknown.

PRODUCTS.

The agricultural products and the costs of production are so varied that it would be next to impossible to answer this question in full. Some idea, however, may be obtained by referring to the following table of costs of production of 112 pounds of wheat during the months of February and June, 1885:

Estates in—	Costs for 0.34 hectare, equal to 0.84 acre.										Result from 0.84 acre per 112 pounds.	Cost of production per 112 pounds.
	Seed.		Labor.			Insurance.		Interest of capital.	Cost of land steward.			
	Pounds.	Value.	Daily wages.	Horses or oxen.	Total.	Stor .s.	Fire.		Cost of land steward.	Total.		
Upper Bavaria	120	\$2 86	\$4 28	\$5 24	\$9 52	\$0 47	\$0 03	\$2 86	\$0 47	\$16 22	\$10 08	\$1 59
Lower Bavaria	150	2 86	3 33	5 49	11 85	38	07	3 81	83	20 19	14 56	1 85

MODE OF PREPARATION.

The corn is mowed short, spread out in rows until completely dry, after turning it over once or twice, then sheaved and housed.

Since 1865 the flail has been used. Six men can thrash 900 quarts per day. With a machine, if hired, the cost is 59 to 83 cents per hour, and 112 to 156 hundredweight can be thrashed.

TAXES.

The Bavarian state tax is collected in the form of a direct land tax, the amount of which is fixed by the extent of the land and the average yearly production.

The communities, provided there is no state law to the contrary, are authorized to collect a consumption tax, but with the limitation that new taxes (not now collected) can only be introduced by state authority, and that the local additional duty, if possible, shall fall on the consumption inside the community district and not upon the production and export. Permission is given for a meat, flour, and corn tax, and most of the larger communities make use of this authority.

The limit of the additional duties varies according to the value of the communities and their financial condition, but they are limited to an invariable rule fixed by royal order of November 27, 1875, by which, for instance, the additional meat and grain duty is fixed as follows:

An ox of 672 pounds or over.....	\$1 02
An inferior ox.....	69
A cow.....	31
A calf.....	07
A swine of 100 pounds or over.....	07
An inferior swine.....	03
56 pounds of imported or manufactured meat.....	15
100 quarts of corn or flour.....	09
56 quarts of corn.....	07
56 quarts of flour.....	08
56 pounds of bread.....	08

In case of re export there is allowed a drawback. Only by consent of the ministry can there be raised other consumption taxes, such as malt, beer, wine, fruit, and game, than those now in force. The tax on malt and beer is a large item.

By special consent of the ministry of state the communities are allowed to demand temporarily 23 cents per 100 quarts of malt and 15 cents per 100 quarts of beer, and for smaller quantities of beer one-fourth of a cent per quart, according to the financial necessities of the community.

PRICES.

In the tariff of duties on foreign imports great changes have taken place since 1850. Owing to extensive railroad facilities agriculture has been greatly developed. This appeared when large quantities of Hungarian, Russian, and American corn and flour were imported at low prices. With the introduction of the corn duties of 1880 of from 12 to 23 cents per 112 pounds these extremely low prices were arrested; still the prices remained low, and there was a demand for additional duties, which is now under consideration.

SALE OF PRODUCTS.

The larger proprietors sell now but little at the markets and prefer to sell at home, to the wholesale merchants, to the large mills, or to the large breweries. The cattle are sold to dealers, butchers, and also on the market. The sale of hops is to dealers and brewers on the spot. The smaller products, such as poultry, eggs, &c., are generally taken by the farmer's wife for sale to the nearest town or sold to a middle man at the farm, who sells them to the produce houses.

LOWER BAVARIA.

SOIL.

Lower Bavaria contains 2,658,576 acres, of which 32.6 per cent. are woodland, 44.1 per cent. farm land, and 17.7 per cent. of meadows. It is divided by the river Danube, and the two sections are quite different as regards elevation, soil, and climate. About two-thirds of the district is situated south of the Danube, and forms part of the Bavarian plateau, commencing at the Bavarian Alps and sloping toward the Donau.

The prevailing soil is diluvial loam. In the Danube plain is a large strip of excellent loose, dark soil, well suited to the growth of general vegetation. Moor and turf formations are found in the valley of the river Isar, which runs through the district in a northeasterly direction.

The climate is favorable, as there is no want of moisture, the dew being as heavy as that of the mountains.

This part of the district is highly fertile. The quantity and quality of oats, wheat, and thick barley are excellent, bringing the highest market prices and are largely planted, although not so largely raised. The conditions are good for fodder, coarse red beets, potatoes, red clover, and lucern.

Where the loam does not suit the red clover an addition of marl proves satisfactory. The soil is well suited to the development of maize, and it ripens in the most unfavorable years.

In the lower parts of the valley between Vilshofen and Passau the conditions of the climate allow the cultivation of maize. In the western part of the district hop-culture is profitable in the diluvial loam soil, naturally drained.

The Hallertau hops enjoy a world-wide reputation. The proportion of meadow land is not a favorable one. The meadows of the Isar and Danube Valleys are inferior in productiveness, moss formation and a thin layer of culturable soil resting on stone, allowing only a poor vegetation of useless kinds of grass. The valleys of the smaller rivers, however, produce a better quality of meadow growth, which is greatly increased by cultivation. It is then seen that the district situated south of the Danube is well suited to the culture of grain, particularly of wheat and barley; consequently the planting of grain predominates.

Cattle raising is carried on only to a limited extent, chiefly for manure.

The part of the district situated north of the Danube is mountainous, the highest point, "Great Arber," being 4,337 feet above the level of the sea, and being a part of the Bayerische Wald.

The culture soil formation is granite and is often covered with woods of considerable extent.

The cultivated portion is composed chiefly of dissolved granite, a strong loam soil, the product in capacity of which is considerably reduced on the high hills and exposed situations. Here the prevailing climate is suitable to winter grain. On the Danube only is the attempt made to raise wheat and barley. In consequence of exposed situation, the quantity and quality of the winter rye, &c., are frequently much damaged. Owing to the extensive woods, the production of wheat and barley is much injured by the heavy rains.

About 22.6 per cent. of the district is occupied by forest lands, but this proportion is considerably surpassed in the Bayerische Wald. Regen has 64.5 per cent.; Grafenau, 50.6 per cent.; Viechtach, 50.6 per cent.; Kötzing, 50.6 per cent.; Wolfstein, 43.2 per cent.; and Wegscheid,

31 per cent. Adjoining, Bogen has 32.4 per cent. and Deggendorf 31.5 per cent. of the total area.

The proportions are less favorable to the cultivation of grain, but more to grass growth. The meadow grass is very prosperous, the water being abundant and sometimes excessive. The proportion of grass growth to cultivated land in the Bayerische Wald as against that in the plain is as follows:

Of the total area of the province there is an average of 17.7 per cent. of grass growth. In the plain the proportion of meadows to the total area is from 7.8 to 20 per cent., and the average of 17.7 per cent. is not reached in nine districts, and only surpassed in five, viz, 18.3 to 20.2 per cent. Against this, in the Bayerische Wald, in Wegscheid, Wolfstein, Deggendorf, Passau, Grafenau, and Viechtach, the meadow area is 18.8 to 33.8 per cent. of the total area. From these proportions cattle-feeding, particularly oxen, is extensive.

IMPLEMENTS.

In harvesting, many Bohemian laborers are employed. The hand tools are generally from English and American models. The "Hohenheimer plow" is supplanted by the "Ulmer" and "Sack" plow, manufactured in Plagwitz, Saxony, among the more intelligent farmers. "Howard's" harrows, French harrows, of Brabant, and the Ringland rollers, are generally used.

Sometimes several farmers join in buying steam machines. The proprietors of steam machines generally travel about the country and do thrashing, &c., at the farmer's residence. Machines for corn-cleaning, sorting, and rape-cutting, grinding-mills, mowing, manuring, and straw machines, and Sack's drill plows are also employed where they prove more economical.

In large dairies is used the milk centrifugal machine.

There are large manufactories and storehouses of agricultural machines at Landshut, Abensberg, Neustadt, Neufahrn, Landau-on-the-Isar, and Straubing.

WAGES, ETC.

The laborers are divided into two classes, servants and day laborers. The first receive full board and lodging, are hired for a long time, and are paid quarterly. The second receive occasionally board and lodging, are paid weekly, and can be discharged at any time.

The servants receive, beside board and lodging, for a man, \$23.80 to \$71 per year according to ability; for a woman, \$9.52 to \$35.70. Servants seek employment from the age of 13 to 14 years, as soon as they are free from school duty, and are paid according to their strength and capability.

The day laborers are paid with board, man, 23 to 31 cents per day; woman, 14 $\frac{1}{2}$ to 28 cents per day. Without board, man, 38 to 47 cents per day; woman, 23 to 35 cents per day.

FOOD AND HOURS OF LABOR.

In winter the shortest day's work is ten hours; when taking care of animals, thirteen hours. From the middle of June at least thirteen hours; during harvest or mowing time, fifteen hours and sometimes more.

With farmers the servants' meals consist of, in the morning, soup at 9 o'clock, bread and beer at noon; on four days soup, dumplings, and vegetables; on the other three days soup, dumplings, and meat; in the

afternoon bread and beer; in the evening soup with meat. On high holidays they receive also at dinner and supper beer and roast meat.

On the large estates the fare is not so good, as the servants have only three meals a day, except in harvest time, when they receive beer and bread in the fore and afternoon.

The estimated yearly nourishment of one person is 500 quarts of rye, 150 quarts of wheat, 200 quarts of potatoes, 22.4 pounds salt, 89.6 pounds beef, 67.2 pounds pork, 28 pounds butter, 52 quarts good milk, 250 quarts of skimmed milk, 80 quarts beer, 3 pounds oil, and 35.84 cubic meters fire-wood.

Taking into account the cost of wash, soap, brushes, rags, house repairs, and the care of the sick, the cost for one servant would be from \$59.50 to \$64.26 per year.

The servants are not very particular about their lodgings; the men usually sleep in the stable and the women in the master's house.

In large estates there is a special room for the servants.

COST OF PRODUCTION.

The regular measure for grain is 112 pounds to the hundredweight. At the average rate of wages the cost is calculated as follows: For man, 7,133 pounds rye per year; for woman, 5,539 pounds rye per year; for man day laborer, 27.32 pounds rye per day; for woman day laborer, 18.97 pounds rye per day.

The cost of production of one ton rye, at 2,000 pounds, amounts to 1.82 days male labor and 2.12 female labor; the result being \$35.13 per ton.

SALE OF PRODUCTS.

The grain is ground at steam or water-power mills. Potatoes are sold both raw and in the form of brandy. Sweet turnips are sold to sugar manufacturers at Ratisbon. The grain is sold to millers, bakers, brewers, and dealers. The export is sent through commission dealers to the Alps, Switzerland, Tyrol, and the Rhine.

TAXES.

The principal tax which the farmer has to pay is the "ground tax," and is calculated on the extent and the quality of the ground.

Rates are fixed by law according to the necessities of the state. For this purpose the value of all estates has been made in classes. At present the ground-tax rate is $2\frac{1}{4}$ per cent. For instance, one acre, twelfth class, pays 12 cents ground-tax rate, and 10.5 acres, \$1.26. Beside the ground tax there is sometimes collected a "soil tax." Formerly the taxes were paid in produce, but by the law of June 4, 1848, it was changed to payment in money. The amount of the "soil tax" varies. Some have more and some less than the ground tax.

ADDITIONAL DUTIES.

Besides the duties fixed on foreign imports by the laws of the Empire and Bavaria there are no particular taxes, but in communities and towns there is collected an additional tax on agricultural products for community necessities. The amount varies in the different towns. For instance, in Landshut the additional tax on animals, &c., is—

Oxen of more than 672 pounds	\$1 02
Oxen of from 168 to 336 pounds	69
Cows	31

Young cattle.....	\$0 27
Calves.....	7
Swine:	
100 pounds or over.....	21
33 to 100 pounds.....	7
Less than 33 pounds.....	3
Sheep and goats.....	4
Imported meat, per 112 pounds.....	16
Wheat, corn, and barley, per 224 pounds.....	11
Imported flour, per 224 pounds.....	16

TRANSPORTATION.

The transportation is made by railroad, and the rates are, per ton, 5.5 cents for fast freight, 3.6 cents for ordinary freight, and 1.8 cents for agricultural products and raw stuffs in quantities of not less than five tons.

JOSEPH W. HARPER,
Consul.

UNITED STATES CONSULATE,
Munich, December 10, 1885.

BRUNSWICK.

REPORT OF CONSUL FOX.

After a careful examination and investigation of the subject, I find that there is much which I cannot treat of at all, partly owing to the fact that my consular district presents no facilities for so doing, and more especially the reticence and unwillingness of manufacturers to give the necessary information. There are, however, notable exceptions to whom I shall not fail to accord proper credit.

I devote this communication entirely to agriculture and agricultural labor, the first topic mentioned in the Department circular, and, as introductory, I beg to offer a few statistical items in regard to this Duchy, which I take in part from the works of Dr. Richard Buerstenlinder, secretary-general of the Ducal Brunswick Agricultural Association. I am further indebted to this gentleman for many courtesies. Without his assistance I would not have been able to report at all upon the subject; I consequently desire to acknowledge my obligations at the outset.

The Duchy of Brunswick lies between 8° 55'—11° 27' east longitude and 51° 33'—53° north latitude, and has an area of 898,649,827 acres, and according to the census of 1880 a population of 349,507 souls.

With the exception of a small portion the Duchy is watered by the river Weser and its tributaries, and is by nature divided into two distinct parts, level and mountainous; a part of the Harz Mountains is included in its territory, which is rich in forests, and cattle raising is extensively carried on in the valleys.

The employment of the people is classified as follows:

	Per cent.
Agriculture and forestry.....	32.68
Mining, blast furnaces, industry building.....	39.31
Merchandising.....	10.13
Personal service, wage-workers.....	6.44
Army.....	.97
Other callings.....	4.69
Without known callings.....	4.76
Calling not given.....	.45
Inmates of institutions and asylums.....	.57

The land is devoted to the following purposes:

Description.	Acres.	Per cent.
Farm lands	437,470,856	48.68
Garden lands	15,128,319	1.68
Meadows	90,658,712	10.39
Common	38,188,526	4.25
Forests	272,443,185	30.32
Roads, water, houses	44,762,229	4.98
Total	896,649,827	100.00

Agricultural land is divided into state domain, knightly, land, and peasant estates. There are 58 of the former and 65 of the second, while the number of land and peasant properties is given at 19,821, in which are included:

Those up to 2½ acres, owned usually by work people	6,248
Up to 12 acres	5,480
Up to 25 acres	3,092
All others	5,001
Total	19,821

The state domains are under the direct supervision and administration of a Government department, and are rented out under contracts generally from twelve to eighteen years; the yearly rental varies; the highest, according to the statistics at my disposal, is 84,000 marks (\$19,992) for 1,118 hectares (2,762,733 acres); the lowest, 4,546 marks (\$1,081.95) for 130 hectares (321,247 acres).

The rental is higher than it would otherwise be, owing to the extensive culture of the sugar-beet.

I have on several occasions had the honor to refer to this point in former reports, and I repeat here that the factor which makes agriculture a profitable calling in this community is the manufacture of beet-sugar.

This agricultural industry has enriched the Brunswick peasantry to an extent that I do not exaggerate when I say that they are economically the best situated of their class in the whole German Empire.

GROUND TAXES.

The law of May 11, 1870, established the division of taxable property into thirteen classes, representing a tax capital of from \$26.77 to 59 cents per hectare (2,471 acres), as follows:

Number of classes.	Farm land yielding winter grains, per hectare.	Meadows yielding hay, per hectare.	Commons for pasturage of cattle, per head.	Tax capital, per hectare.
	<i>Scheffel.*</i>	<i>Centner.†</i>	<i>Hectares.</i>	
I	60	120	1	\$26.77
II	55	108	1	23.80
III	50	96	1	20.82
IV	45	84	1	17.85
V	40	72	1	14.87
VI	35	60	1	11.90
VII	30	50	1	9.52
VIII	25	40	1	7.14
IX	20	30	1	4.76
X	15	20	1½	2.97
XI	12½	16	2	2.08
XII	10	12	3	1.19

*1.6 bushels.

†110.23 pounds.

When the capacity of the land is estimated at less than the above, the same comes under Class XIII, with a tax capital of 59 cents per hectare.

Ponds and lakes which can be drained are assessed according to the value of the neighboring property, and when such land has various values, the average is taken. Forests are divided, according to their yield, into four classes, viz:

	Per hectare.
Class 1	\$4 76
Class 2	3 17
Class 3	1 58
Class 4	79

While in the cities the ground tax is assessed according to the rental of the houses thereon, in the country the tax capital for the houses is determined in accordance with the tax capital which rests upon the productive land belonging thereto. Of the total tax on agricultural lands in the duchy, \$2,476,883.14, or 85.97 per cent., is on farms, and \$404,181.59, or 14.03 per cent., is on forests.

AGRICULTURAL LABOR.

The method of farming is intensive, and the soil is worked to give the largest possible yield; especially is this the case where the sugar beet is cultivated.

There is, therefore, an extended demand for labor; it is sometimes so great that, notwithstanding the large population, other parts of the country are drawn upon for supply. Of late the cultivation of the beet has been curtailed in consequence of stagnation in the sugar market, brought about by overproduction; this, together with increased use of agricultural machinery, has had the effect to lessen somewhat the demand for labor, or at least equalize the supply and demand.

There is, however, a large amount of work in beet raising, which must of necessity be performed by manual labor, and when such work is pressing all classes of hands are employed. Country schools are closed at such periods, and the children, being better adapted to work requiring the bending of the body, are used in weeding, cutting off the leaves of the beet, &c.

Generally speaking, the farm laborer is the so-called "free wage worker," (*freie Tagelöhner*), who leases a parcel of land, usually of about half an acre, on which he raises products for his own sustenance and for market. This labor is held to be preferable to all other; the man has a home, an interest in the community, and is moderately sure to have regular employment at the neighboring farms.

On the larger estates there are families who have a bit of land which they lease from the proprietor at a nominal rental and bind themselves to work on the estate. Members of the family receive the market wage.

They have comfortable quarters, feel themselves thoroughly identified with the estates, and as a rule participate in certain funds established by the proprietor for their benefit in the case of sickness, old age, or death. As to this latter point, the landed proprietors in this vicinity long ago anticipated the recent imperial laws in regard to provision for workmen in cases of disability.

The advantage to the workmen is apparent. The employer sees his in the fact that he thus retains help upon which he can place dependence.

The law which formerly prohibited the parcelling of peasant estates

having been repealed, it is now possible for an agricultural laborer to become possessed of land, and in certain districts, chiefly where the sugar beet is cultivated, in order to retain labor, parcels are reserved for so-called "builders" (anbauer), who are enabled to purchase a small house and garden, under certain conditions, comparatively cheap.

The necessary capital to improve the property can be obtained from the ducal loan funds (Leihhaus), to be repaid in yearly instalments at 4 per cent. This would seem to be a very fair scheme, and I understand that it has worked well in many instances, but it appears that there are many complaints that the laborers, after finally completing the purchase and becoming full owners, are totally lost to agriculture, seeking work preferably in factories, quarries, railways, &c., thus defeating the objects which the originators of the plan had in view.

FEMALE LABOR.

The care of the dairy is in the hands of females, and this class of labor is the most difficult of all to obtain. Young country girls prefer the fascination of city life, and go either into service or in factories. Females are further extensively employed in field labor, and receive about half the wages of a man, except during the beet harvest, when both sexes receive alike the same wages.

RATES OF WAGES.

The rate of wages paid to agricultural labor depends entirely upon the locality where such labor is employed, being considerably higher in the level than in the mountainous districts. For instance, the income of a laborer and his family in the immediate vicinity of Brunswick (level) is given by Dr. Buerstenbinder as follows:

Wages of the man	\$86 39
Wages of the wife	64 97
Earnings from land	10 71
Free lodgings	10 71
Hauling	3 57
Preparing produce for market	17 85
	194 20

In the vicinity of the city of Gandersheim (mountainous):

Wages of the man	\$83 30
Wages of the wife	52 36
Wages of a child	21 42
Emoluments in produce	17 13
Preparing produce for market	10 71
	184 92

It will thus be seen that the family of a laborer in the mountainous district, even with the assistance of a child who is assumed to earn \$21.42, receives \$9.28 less than one in the level districts, without such life.

I inclose a table, marked A, prepared by Dr. Buerstenbinder for official use in 1880, showing the wages paid in winter and summer; and a second table, marked B, from the same source, at the same time, showing the highest and lowest price paid for piece work in agriculture in the several districts of this duchy. Although these statistics were compiled five years since, I am assured that they are authoritative to-day.

At my instance Edward Schulze, esq., proprietor of the Watzum es-

tates, in the district of Wolfenbüttel, has prepared a table, which I inclose (marked C), showing the detailed receipts and expenditures of a certain laborer on his estates.

In his letter to me Mr. Schulze says:

Laborers in this community receive a cash wage entirely, and no part of same is paid in produce except as mentioned in the table; a man receives 35.7 cents per diem summer and winter, working time 5 to 11 a. m. and 1 to 6 p. m.; women 19 cents for same time. In piece-work, hoeing, weeding, and gathering beets, mowing and binding grain, the wage is increased according to character of the work. A man will earn from 59.5 to 71.4 cents mowing; a woman, binding grain and gathering behind the scythe, 29.7 to 53.7 cents per diem.

Men and women both earn from 35.7 to 47.6 cents hoeing, and from 47.6 to 59.5 cents gathering beets.

In this latter work children are also used to cut off the leaves. A child from ten to twelve years old will earn in the season, for a period of from three to four weeks, 23.8 cents daily.

Wage workers obtain from the proprietor of the estate about $\frac{1}{4}$ morgen (1 Brunswick morgen, .6 acre) of potato and flax land at an annual rental of \$7.14 per morgen, and further they often rent from 1 to 2 morgen church land; they obtain the necessary teams for working from the proprietor.

Part of the workmen live in lodgings rented from the estate; part live with small farmers.

FLUCTUATING LABOR.

It has been stated that at times the demand for labor was so great that other parts of the country had to be drawn upon for supply. This, which may be properly called fluctuating labor, is employed chiefly in beet culture, and is engaged by contract for the period from April to November. They are generally young people, more especially females. The main points in the contract are:

- (1) Daily cash wage of from 23 to 30 cents.
- (2) Often a dotation of $1\frac{1}{4}$ cents per diem, provided they remain steadily at work until the contract expires, and in order to secure this a part of the weekly wage, amounting to from 20 to 30 cents, is retained.
- (3) Each employé receives from 20 to 70 cents land money upon entering into the contract.
- (4) Extra hours are paid for at the rate of 2, 3, and 4 cents per hour.
- (5) Working time from 5 or 6 to 11 a. m., and from 1 to 7 p. m., with one-half hour for breakfast and one-half hour for supper.
- (6) Coffee in the morning, warm meal noon and night, meat Sundays only.
- (7) As a rule, every five or six work people receive 1 quart of milk and often 1 pound of bread per head daily.
- (8) Journey to and from home is paid *once*—fourth-class railway fare.
- (9) All have common quarters, and in case they prepare their own food they are provided with (a) place to cook, (b) wood for fire, (c) cooking utensils, and (d) 26 pounds of potatoes and $1\frac{1}{2}$ peck of peas or other vegetables per head weekly.
- (10) Doctor and apothecary free.
- (11) Opportunity to ride to church on Sunday. Employés of the Catholic faith always make this stipulation.

COST OF LABOR IN PRODUCTS.

I inclose two tables, marked D and E, showing the average prices of feed and provisions, and those of the chief kinds of grain, as quoted on the Brunswick Exchange in 1884.

The average price of 1,000 kilograms (2,204 pounds) of rye, the principal breadstuff in use here, was \$35.36; the average daily wages of an

agricultural laborer was 38.08 cents in the level and 30.22 cents in the mountainous districts, the equivalent of 23.8 and 18.9 pounds rye, respectively.

WILLIAM C. FOX,
Consul.

UNITED STATES CONSULATE,
Brunswick, December 9, 1885.

TABLE A.—Rates of wages paid in German currency to agricultural labor in the Duchy of Brunswick.

[Expressed in marks; German mark = 23.8 cents.]

[illegible]

PIECE-WORK PRICES.

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TABLE B.—Highest and lowest prices in German currency which were paid to agricultural labor for piece-work of various kinds in the several districts of the Duchy of Brunswick in the years 1886 and 1890.

[One German mark = 23.8 cents; 1 Brunswick morgen = $\frac{1}{2}$ acre; 1 himpten = 1.02 bushel.]

Amtscourt districts.	Sowing wage for 1 morgen.				Potato planting behind the plow, 1 morgen.				Potato planting with the spade, 1 morgen.			
	1886.		1890.		1886.		1890.		1886.		1890.	
	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.
<i>Circuit Brunswick.</i>												
Amtscourt Riddagshausen	0.10	0.40	0.12	0.16	0.70	2.00	0.85	1.12	1.50	4.00	1.50	2.00
Amtscourt Vechelde	0.08	0.20	0.14	0.16	0.75	1.80	1.00	1.50	1.50	4.00	2.00	2.12
Amtscourt Thedinghausen .....	.....	.....	0.10	0.15	.....	.....	2.50	2.00	2.50	2.50	4.50	5.25
<i>Circuit Wolfenbüttel.</i>												
Amtscourt Wolfenbüttel	0.07	0.20	0.15	0.17	0.90	1.00	1.02	1.25	1.50	7.50	1.55	2.08
Amtscourt Salder	0.08	0.30	0.10	0.20	0.60	1.50	.....	.....	1.00	4.50	2.70	3.30
Amtscourt Schöppenstedt	0.06	0.20	0.09	0.15	0.70	1.20	0.65	0.85	2.00	4.00	2.08	3.16
Amtscourt Harzburg	0.25	0.25	0.17	0.22	1.50	1.50	.....	.....	2.00	3.00	.....	.....
<i>Circuit Helmstedt.</i>												
Amtscourt Helmstedt	0.10	0.10	0.17	0.20	0.60	1.20	0.88	1.12	0.90	3.00	3.00	2.60
Amtscourt Schöningen	0.12	0.25	0.12	0.21	0.75	1.00	0.90	1.00	1.20	1.50	2.00	2.50
Amtscourt Königslutter	0.05	0.15	.....	.....	1.50	1.80	1.60	2.05	2.50	3.00	2.40	2.50
Amtscourt Vorsfelde	0.05	0.12	0.12	0.15	0.80	1.30	0.95	1.05	2.00	4.00	1.57	2.05
Amtscourt Calvörde	0.12	0.12	0.15	0.19	1.00	1.00	0.71	0.90	2.00	2.00	1.27	1.40
<i>Circuit Gandersheim.</i>												
Amtscourt Gandersheim	0.06	0.10	0.19	0.24	.....	.....	2.10	2.75	2.00	5.00	3.16	3.87
Amtscourt Greene .....	.....	.....	0.10	0.20	.....	.....	.....	.....	.....	.....	.....	.....
Amtscourt Lutter a. Bge	0.08	0.10	0.12	0.14	1.00	1.00	1.75	1.75	2.00	2.50	3.00	3.75
Amtscourt Bessau	0.15	0.15	0.12	0.19	0.90	0.90	1.10	1.30	1.50	1.50	4.75	5.50
<i>Circuit Holminden.</i>												
Amtscourt Holminden	0.10	0.15	0.10	0.12	0.60	0.60	0.84	1.07	1.20	5.00	4.25	5.67
Amtscourt Städteldorf	0.10	0.15	0.20	0.25	.....	.....	0.70	0.80	.....	.....	2.50	4.10
Amtscourt Eschershausen	0.15	0.25	0.15	0.20	1.50	1.50	0.90	1.10	2.50	3.00	3.47	4.08
Amtscourt Ottenstein .....	.....	.....	0.15	0.20	.....	.....	2.00	2.00	.....	.....	4.68	5.25
<i>Circuit Blankenburg.</i>												
Amtscourt Blankenburg	0.10	0.10	0.10	0.12	0.75	0.80	0.75	0.90	2.50	2.50	1.25	1.50
Amtscourt Hasselfelde and Walkenried	0.12	0.30	0.30	0.40	1.50	2.00	1.50	2.00	2.00	2.00	.....	.....

PIECE-WORK PRICES.

TABLE B.—Showing highest and lowest prices in German currency, *fr.*—Continued.

[One German mark = 23.8 cents; 1 Brunswick morgen = $\frac{1}{8}$ acre; 1 himpten = 1.02 bushel.]

[illegible]

TABLE B.—Showing highest and lowest prices in German currency, *fr.*—Continued.[1 German mark = 23.8 cents; 1 Brunswick morgen = $\frac{1}{4}$ acre.]

Amts court districts.	Hoeing sugar beets, 1 morgen.				Gathering and cover- ing sugar beets, 1 morgen.				Mowing, binding, and stacking wheat or rye, 1 morgen.			
	1896.		1890.		1896.		1890.		1896.		1890.	
	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.
<i>Oiroult Brunswick.</i>												
Amts court Riddagahausen.....	2.50	4.50	1.88	3.67	7.50	12.00	9.00	13.00	1.50	2.00	2.17	4.17
Amts court Vechelde.....	2.00	3.50	4.40	5.37	7.00	8.00	8.40	10.00	1.50	2.00	2.37	3.00
Amts court Thedinghausen.....			7.00	9.25			11.00	13.25			2.25	3.25
<i>Oiroult Wolfenbüttel.</i>												
Amts court Wolfenbüttel.....	1.50	3.50	1.88	3.33	7.50	11.00	11.50	13.25	1.75	4.00	2.50	3.75
Amts court Salder.....	2.00	6.00	6.20	8.33	9.00	10.00	9.13	12.00	1.75	3.50	2.43	3.37
Amts court Schöppenstedt.....	2.25	3.00	5.12	6.65	7.00	9.00	9.75	14.50	1.50	2.50	2.50	4.13
Amts court Harburg.....	7.00	7.00	2.25	3.50			10.00	12.00	2.00	2.30	3.00	3.35
<i>Oiroult Helmstedt.</i>												
Amts court Helmstedt.....	2.75	4.50	2.19	3.50	9.00	9.00	11.00	13.00	1.50	2.00	2.58	3.00
Amts court Schöningen.....	1.50	2.50	6.00	8.00	7.50	8.25	9.00	13.00	1.50	2.75	2.75	4.00
Amts court Königsutter.....	2.50	3.00	2.25	3.25	3.00	8.50	11.00	12.87	1.00	2.30	2.75	3.50
Amts court Varsfelde.....	3.00	4.50	4.25	8.25	6.00	12.00	11.00	13.00	1.50	2.50	2.00	3.50
Amts court Calvörde.....	3.80	3.80	2.00	2.50			6.00	9.00	1.80	1.90	3.00	3.13
<i>Oiroult Gandersheim.</i>												
Amts court Gandersheim.....	4.00	4.50	2.25	2.00			11.00	12.00	1.70	2.50	2.75	3.50
Amts court Greene.....			2.00	2.63			8.37	13.50	2.50	2.50	2.00	3.00
Amts court Lutter a Bge.....	4.00	7.50	3.18	3.75	8.50	8.50	10.34	11.07	1.50	3.00	2.34	3.00
Amts court Bessen.....	2.50	4.80	7.25	8.50	4.50	4.50	10.50	12.00	1.50	2.50	2.65	3.13
<i>Oiroult Holzminden.</i>												
Amts court Holzminden.....	3.50	5.00	2.17	3.00			8.18	9.50	1.80	2.50	2.34	3.00
Amts court Stadtholanderf.....			2.25	3.00			11.00	11.33	2.00	2.00	2.50	3.00
Amts court Becherhausen.....	6.00	9.00	3.40	4.70			9.00	9.75	2.80	4.00	2.33	3.04
Amts court Ottenstein.....			2.33	3.24			11.16	12.00	1.00	2.00	2.33	3.50
<i>Oiroult Blankenburg.</i>												
Amts court Blankenburg.....	3.50	4.00	2.50	3.34			10.33	12.50	2.00	2.00	2.50	3.25
Amts court Hasselfelde and Walk- enried.....									2.00	3.00	2.25	2.00

TABLE B.—Showing highest and lowest prices in German currency, *§c.*—Continued.[1 German mark = 23.8 cents; 1 Brunswick morgen = $\frac{1}{2}$ acre.]

Amts court districts.	Mowing, binding, and stacking barley or oats, 1 morgen.				Mowing, binding, and stacking clover or lucern, 1 morgen.				Mowing grass, 1 morgen.			
	1886.		1880.		1886.		1880.		1886.		1880.	
	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.
<i>Circuit Brunswick.</i>												
Amts court Riddagshausen.....	0.75	3.00	1.83	2.42	0.75	2.00	1.40	2.08	0.75	1.50	1.20	1.82
Amts court Vechelde.....	1.00	3.00	1.95	2.75	1.00	1.50	1.10	1.58	1.00	2.00	1.25	1.60
Amts court Thedinghausen.....	2.00	2.00	2.00	2.75	1.50	1.50	2.00	2.50	1.50	1.50	1.50	2.00
<i>Circuit Wolfenbüttel.</i>												
Amts court Wolfenbüttel.....	0.75	3.50	2.50	4.25	0.75	1.50	2.24	2.87	0.75	1.50	1.80	1.75
Amts court Salder.....	1.50	2.50	2.20	2.94	1.00	1.50	1.25	1.68	1.00	1.50	1.50	1.63
Amts court Schöppenstedt.....	1.10	2.00	2.37	3.50	0.65	1.20	1.05	2.25	0.65	1.50	1.38	1.81
Amts court Harzburg.....	1.80	2.30	2.45	3.00	1.50	1.50	1.78	2.34	1.50	1.50	1.68	2.00
<i>Circuit Helmstedt.</i>												
Amts court Helmstedt.....	1.05	1.50	1.83	2.63	0.85	1.00	1.75	2.30	0.85	1.00	1.22	1.74
Amts court Schöningen.....	1.30	2.00	2.05	2.87	0.85	1.50	1.70	2.15	1.00	2.00	1.81	2.25
Amts court Königsutter.....	1.15	2.25	2.44	2.84	0.75	1.25	1.44	1.81	0.75	1.25	1.38	1.87
Amts court Vorfelde.....	1.25	2.50	1.66	2.23	1.00	1.00	1.16	1.56	0.75	1.25	1.25	1.68
Amts court Calvörde.....	1.50	1.50	1.25	2.12	1.00	1.00	1.00	1.25	1.00	1.00	1.06	1.25
<i>Circuit Gandersheim.</i>												
Amts court Gandersheim.....	1.50	2.00	2.00	2.60	0.75	1.25	1.81	2.33	0.75	1.00	1.12	1.50
Amts court Greene.....	1.80	1.50	2.04	2.90	.....	.....	1.55	2.15	1.50	1.50	1.55	1.95
Amts court Lutter a Bge.....	1.20	1.50	1.97	2.53	0.80	1.00	1.42	1.91	0.80	1.50	1.50	2.00
Amts court Seesen.....	1.80	2.50	2.00	2.67	1.00	1.00	1.60	2.13	1.00	1.50	1.62	2.00
<i>Circuit Holmünden.</i>												
Amts court Holmünden.....	1.40	3.50	1.63	2.50	1.00	1.50	2.00	2.50	1.00	1.50	2.00	2.64
Amts court Stadoldendorf.....	2.00	2.25	2.08	2.40	1.00	1.00	2.25	2.50	1.50	1.00	1.75	1.88
Amts court Bockershausen.....	2.50	3.00	2.00	2.40	0.40	1.25	1.55	1.98	0.80	1.00	1.50	1.80
Amts court Ottenstein.....	.....	.....	1.94	2.50	0.75	1.00	1.87	1.94	0.75	0.90	1.81	2.25
<i>Circuit Blankenburg.</i>												
Amts court Blankenburg.....	1.25	2.00	1.83	2.16	1.20	1.20	1.68	2.00	0.90	1.20	2.24	2.08
Amts court Hasselfelde and Walkenried.....	1.00	1.80	0.95	1.36	1.50	1.50	2.24	3.08	1.16	1.50	2.00	2.56

INCOME AND EXPENDITURE.

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TABLE C.—*Annual receipts and expenditures of a certain agricultural labor on the estates of Edward Schulze, esq., at Watrum, District of Wolfenbüttel, Duchy of Brunswick.*

Receipts.		Amount.	
The man:			
248 days' wages, at 35.7 cents	\$88 54		
25 days' mowing, at 71.4 cents	17 85		
35 days' sugar-beet gathering, at 59.5 cents	20 52		
Extra hours and other small emoluments	7 14		
		\$124 35	
The wife:			
60 days' wages at 19.4 cents	11 42		
45 days' wages hoeing beets, gathering and binding grain, at 35.7 cents	16 07		
35 days' gathering sugar beets at 59.5 cents	20 82		
		48 31	
The children:			
40 days' weeding and cleansing sugar beets, at 23.5 cents		9 52	
		192 18	
Receipts from 2 morgen ¹ rented land	53 36		
Receipts from $\frac{1}{2}$ morgen potato and linen land	14 28		
Receipts from raising geese	4 76		
		71 40	
Total receipts		263 58	
Total expenditures		257 22	
Balance		6 36	

Expenditures.		Amount.	
Food:			
1 swine, 300 pounds, at 11.9 cents	\$35 70		
Other meat, 40 pounds, at 11.9 cents	4 76		
Milk, 350 liter ² , at 2.38 cents	5 95		
Meal for bread, $\frac{1}{2}$ himpten ³ per week, including cost of baking, at 95.2 cents ..	37 12		
Legumes, herring, spices, fruit, &c	5 71		
Wheat flour (for cake)	2 85		
Salt, 70 pounds, at 2.38 cents	1 67		
Coffee, 25 pounds, at 23.5 cents; chicory, \$1.19	8 21		
Sugar, 30 pounds	8 80		
Liquors	5 00		
Butter and lard, 100 pounds, at 23.5 cents	23 80		
Potatoes, $\frac{1}{2}$ wispel ⁴ , at \$9.52	14 28		
		\$148 96	
Clothing:			
For man, \$11.90; wife, \$4.76; children, \$7.14	23 80		
Boots and shoes for family	14 28		
		38 08	
Lodging:			
Lodgings with garden		11 90	
Fire:			
Wood or coal, including carriage	14 28		
Petroleum	1 90		
		16 18	
Other expenses:			
Keeping up furniture, beds	3 57		
Keeping up kitchen	1 19		
Keeping up tools	1 42		
50 pounds soap, at 9.5 cents; starch, oil (thrau), 95 cents	5 70		
Doctor, apothecary	2 88		
School money	3 85		
Land rental, 2 morgen, at \$10.71	21 42		
Land rental, $\frac{1}{2}$ morgen potatoes, at \$7.14	3 57		
		42 10	
Total expenditures		257 22	

N. B.—Threshing is done principally by machinery; the labor needed thereby is paid for by regular wage. Rye, beans, and peas are threshed by hand, the workman receiving a $\frac{1}{4}$ as his share; he rarely earns over 35.7 cents per day, however.

¹ 1 morgen = $\frac{1}{2}$ acre.

² 1 liter = 2.11 American pints.

³ 1 himpten = 1.92 bushels.

⁴ 1 wispel = 24 bushels.

TABLE D.—Average prices of feed and provisions in Brunswick (1884)

[1 kilogram = 2.205 pounds.]

Grain and legumes.	Price.	Meat, fat, eggs.	Price.
Peas (yellow, for cooking).....per 100 kilos.	\$5 04	Beef (joints).....per 1 kilo..	\$0 31
Beans (white).....do.....	6 74	Beef (sides).....do.....	28
Lentils.....do.....	8 08	Pork.....do.....	29
Potatoes.....do.....	1 19	Veal.....do.....	24
Straw.....do.....	1 05	Mutton.....do.....	31
Hay.....do.....	1 54	Bacon (smoked).....do.....	40
		Edible butter.....do.....	58
		Eggs.....per 60 kilos.....	87

TABLE E.—Average monthly and yearly prices (for 1884) of the chief kinds of grain, per 1,000 kilograms, in United States currency, as officially quoted on the Brunswick grain and produce exchange.

[1,000 kilograms = 2,204.6 pounds.]

Months.	Wheat.	Rye.	Barley.	Oats.
January.....	\$40 22	\$35 22	\$41 17	\$36 41
February.....	40 22	34 51	41 17	36 41
March.....	40 46	34 08	40 94	36 99
April.....	39 98	34 27	40 94	37 13
May.....	40 70	35 23	40 46	37 60
June.....	41 17	36 59	42 13	38 08
July.....	41 65	37 13	42 13	38 08
August.....	37 00	35 46	39 27	36 18
September.....	34 99	35 23	38 08	31 42
October.....	34 99	34 99	37 84	31 99
November.....	34 99	35 23	38 08	32 56
December.....	34 75	34 99	37 00	33 23
Annual average.....	38 48	35 26	39 79	35 74

STETTIN.

REPORT OF CONSUL DITTMER.

The area employed for agricultural purposes in this district is of the most various condition and formation; the main part is flat; however, there are also some hilly and even mountainous regions. The quality of the soil varies from sterile sand to the finest wheat-fields. Generally the most productive soil is in the vicinity of large towns and alongside the rivers.

About three-fifths of this area belongs to proprietors, possessing each more than 100 hectares, the rest to peasants and cottagers, all of whom cultivate their own ground, with the exception of those who work Government lands or the lands of a rich proprietor under lease.

The rent paid for Government or private lands varies according to their situation and productiveness from 20 to 50 marks (\$5 to \$12) per hectare; the time of the lease is mostly stipulated for eighteen years.

The agricultural laborer generally receives daily wages and lives in the small houses belonging to the estate. Only the thrashing of grain and the digging of potatoes is done by the job. For thrashing, the fifteenth or seventeenth part of the proceeds, according to the yielding of the ears, is given to the laborer as wages.

Farmers holding smaller estates work their lands by the iron plow and by the harrow, drawn by two horses, whilst proprietors of larger

estates mostly employ the steam-plow, built after the American system. On such larger estates, also, the American thrashing-machine is much in favor.

The average daily wages amount in the environs of the towns to about 2 marks (50 cents), in the country to about 1.50 marks (37½ cents), which are generally paid every Saturday, or on the larger estates monthly. Agricultural labor is here never paid by the hour. The laborers have generally to be at work from 5 o'clock in the morning to sunset, but in some parts of the country they work only from 6 a. m. to 6 p. m.

COST OF LIVING.

According to the number of children, the diligence and capacities of the housewife, and the distance he lives from the neighboring town, the subsistence of the laborer varies materially.

Meat he can, at least during the summer, seldom afford. He generally lives on vegetables, potatoes, flour, bread, salt herrings, and the milk of a cow and three or four sheep, for which his employer has to supply him with fodder, or a pig, which he buys when it is young and has to feed and fatten himself, and some fowls and geese.

Of these he kills the pig, one or two sheep, and some of the poultry, for his own living during the year. He sells some butter, and this and the eggs of his fowls, and the geese, particularly the latter, the feeding and fattening of which cost him next to nothing, as they require corn for only three or four weeks, form a great item in the income of an agricultural laborer in this district. Potatoes, fruit, and vegetables he grows in the garden belonging to his small house; grain he earns by thrashing. The only articles he buys are soap, petroleum, boots, and some of his clothes.

In many villages the housewife spins and weaves also the linen for the household and the stuff for her husband's and her own working clothes, a very durable texture of wool and linen yarn, called "warp."

The husband's Sunday dress, generally made of blue woollen cloth, is bought in town, and generally costs from \$10 to \$12.50; it has to last many a year.

The laborer's dwelling place consists of one room, in some villages of two rooms, containing a stove, two smaller rooms, a kitchen, and a shed for one cow, a pig or two, three or four sheep, some fowls and some geese, to which dwelling place belongs also a garden of the size of at least one-eighth hectare. For these commodities a rent of generally \$7.50 is paid.

It is almost impossible to satisfactorily answer the questions as to the costs of labor as they stand in an inverse ratio to the productiveness of the soil.

The worse the soil is, the larger, therefore the area to be cultivated must be in proportion to the crop, and the greater are also the expenses at a proportionally small return. On good soil about one-half of the value of the crop, on inferior soil about two-thirds of it, is in general consumed by the costs including the living of the proprietor and one-half resp, one-third for paying the interest on the capital invested.

As during the last preceding years the crops have been only middling, and the prices of almost all the agricultural products low, the landed proprietors and farmers got out of their crops seldom more than their *own expenses*, and therefore have not been able to pay the interest on the money invested, which has caused an accumulation of the debts upon landed property from year to year.

In the larger towns wheat and rye are ground by steam-mills, in the smaller towns and in the country by wind-mills and water-mills, to groats or flour of three different degrees of fineness. The millers very often make use of the American sieve cylinders. A great part of the barley reaped is consumed for brewing purposes, the rest exported to foreign countries, mostly to England.

The other kinds of grain are used as fodder, and from about half of the potato crop spirits are distilled; the other half is used as human food and as fodder.

Beet-roots are almost exclusively turned into sugar. During the last years there has been such an overproduction of beet-root sugar that just now a great stagnation in the trade also of this article has commenced, and most probably will last for some time.

According to the new customs tariff the following duties are levied on grain per ton, as follows, viz :

	Marks.
Wheat	* 30
Rye	* 30
Barley	† 15
Maize	† 15

No local taxes are raised on the above-mentioned kinds of grain anywhere in this district.

The only kind of grain of which the export surpasses the import to a quantity worth mentioning is barley, for in 1884 about 10,000 tons more were exported than imported exclusively by sea. It was shipped mostly to England, and also to Sweden, Denmark, and Belgium.

Freights generally vary much. However, this year they have been pretty steady; from 1½ to 1¾ pence have been paid for 500 pounds of barley from Stettin to the English coal ports during the whole season.

The only agricultural products that could be advantageously imported to Stettin are maize and cloverseed, as both of them are cultivated in this district but to a very small extent.

JULIUS DITTMER,

Vice and Deputy Consul.

UNITED STATES CONSULATE,
Stettin, October 31, 1885.

AGRICULTURE AND AGRICULTURAL MACHINERY IN ALSACE-LORRAINE.

REPORT OF CONSUL BALLOW.

A decided tendency has been of late apparent among many of those who are engaged in agricultural pursuits in Alsace-Lorraine, to concentrate their scattered fields, and to enlarge the acreage of their farms, and by so doing make a business of farming instead of an adjunct in eking out an existence. There are at present a large number of farmers who have over one hundred acres of land under cultivation, but in most cases until recently these hundred or more acres consisted of a field here and there which usually were remote from each other, which rendered it impossible to use none but small implements in their cultivation. Of late, however, many are endeavoring with success to combine these scattered fields, and by so doing make the cultivation of the same easier,

* About \$7.50.

† About \$3.75.

and the use of sowers, reapers, mowers, and thrashers a possibility with profit to those interested. One of the principal reasons why those who are engaged in farming are endeavoring to combine their scattered acres is that they are each year becoming more dependent upon farm machinery in the cultivation of their land. This is owing to the fact that the friendly relations which existed until recently between the employers and the employed have undergone a great change. Formerly farm hands were generally considered as a part of the family, and they remained with their employers year after year; but now that is all changed; and to describe the condition of affairs at present existing, I quote from an article which recently appeared in an Alsatian journal, as follows:

The time when farm servants of both sexes were engaged from year to year and remained upon the same farm for a long time has disappeared. The moral condition of these servants has changed; they are no more, as a general thing, trustworthy; and the relation between the farmers and their servants is very much strained. In many cases farm hands are inclined to drunkenness. They demand higher wages than formerly, and they require better food and accommodations generally. Formerly they received a stipulated sum, with board, &c., yearly; now, they must be paid weekly, and sometimes daily; and with all this the value of their labor has considerably decreased.

Now, this condition of affairs naturally makes those interested seek a remedy, and they understand that a remedy is to be found in combining their separated fields, and by the employment of machinery in the cultivation of their farms. The exchanging, buying, and selling necessary in order to combine these parcels of land is made easier by the recognized fact that in order to do this concessions must be made, and in some instances sacrifices; but it is becoming gradually accomplished, and my purpose in submitting this report is to inform the manufacturers of farming machinery and farm implements in the United States of this fact; and that Alsace-Lorraine can be considered from the present time as a much better field than it has hitherto been for the introduction and sale of our excellent agricultural machinery of various kinds. American agricultural implements of the smaller kinds have been introduced here during the past few years, and they have given unqualified satisfaction to those who have used them; and the good impression which their lightness, durability, high finish, and unequaled utility have caused will materially assist the introduction of our American farm machinery.

LAND UNDER CULTIVATION.

The total area of cultivated land in Alsace-Lorraine is at present as follows:

	Acres.
Plowed land	1, 718, 240
Meadow land	440, 440
Pasture land	77, 077
Vineyards	1, 391, 268
Total	3, 627, 026

According to the published statistics of the year 1882 there were at that time 627,800 people, servants included, engaged in cultivating the ground; this number would give an average of one person to each two acres under cultivation. The nature of the soil is on the whole favorable to agriculture; there is a belt of rich fertile land extending from the promontory of the Jura mountains towards the northern limit of Alsace; this belt is the best land for agriculture. East from this there is

an expanse of good rich soil on a stony underground which follows the course of the river Rhine; this section is called Ried, and it extends from Basle to Weissenburg. The northern part of Alsace is less fertile; it, however, in many parts, is very favorable to agriculture. Lorraine is on an average less fertile than Alsace; and particularly is this true in the districts of Metz and Chateau Salins, where the soil is stony and calciferous. Generally, the correct proportion of meadow to plowed land is considered to be one to three; this proportion we find in Alsace, but in Lorraine the proportion is but one to five. The largest farms are, however, to be found in Lorraine. At present there are 15,000 farms of over 100 acres in extent in Lorraine, and but 300 farms of over 100 acres in Alsace. The number of households engaged in farming throughout Alsace-Lorraine at the present time is 233,866; 55 per cent. of this number are owners of their farms; the balance either rent them or cultivate them for a share of the profits. In Alsace 1 hectare ($2\frac{1}{2}$ acres), sometimes suffices to maintain a family, but the average size of the small farms is 12 acres; these are mostly found in the wine-growing districts, or where tobacco, hops, and hemp are largely grown.

CROPS.

The greater part of the plowed land is given to the cultivation of wheat and leguminous crops. The wheat culture occupies in Lorraine 61 per cent. and in Alsace 57 per cent. of the whole. Tobacco is chiefly grown in Lower Alsace, where it occupies 6,862 acres. Last year the total area given to the growth of tobacco was 8,121 acres. Alsatian hops rank next in quality to the Bavarian product, and they are also largely grown in Lower Alsace; they occupy at the present time an area of 11,730 acres. Quite a large quantity of these Alsatian hops of prime quality are yearly exported to the United States, where they are disposed of as genuine Bavarian hops; they really differ very little in quality. The area given to the cultivation of fodder-plants is 10.51 per cent. of the agricultural area. In Lower Alsace it is 9 per cent. and in Upper Alsace 12 per cent.; this culture has increased one third since 1870.

VINEYARDS.

	Acres.
Upper Alsace	30,040
Lower Alsace	35,340
Lorraine	15,640
Total	81,020

Since the year 1866 viticulture has increased about one-sixth of its former area. The expense attached to cultivating vineyards varies from \$80 to \$100 per acre. The yield of the Alsatian vineyards has decreased since 1877; the two last years show a change for the better, however; last year the average yield per acre was 500 gallons. A marked advance in the price of Alsatian wines has been apparent since 1880. This increase has in some varieties been over 50 per cent.

FRANK W. BALLOW,
Consul.

UNITED STATES CONSULATE,
Kehl, February 13, 1886.

SAXONY.

REPORT OF CONSUL TANNER.

The incomplete state of this report comes from the reluctance of German manufacturers in supplying any information relative to the operations of their mills. To most of the questions contained in the circular no two manufacturers will make the same reply as to the cost of production of the same fabricated stuff. This arises from the fact that the prices of production of any one material varies. For instance, one manufacturer may expend, say, from \$5,000 to \$10,000 on patterns for one season alone, another not so much. He then prepares sample goods which he sends abroad for the purchasers' inspection. Perhaps one-half or a quarter of these samples prove to be saleable; the loss incurred on the rejected patterns must then be made good by increased orders upon the accepted goods, as competition here is much too keen to admit of the dangerous experiment of raising the prices on the saleable goods or deteriorating their quality.

Another question is the price of the warp and weft. The price of the dyestuffs, the amount of finish given to goods, and the price of labor. It is upon the proper selection and judicious employment of all these that the success of the manufacturers' venture largely depends.

Another consideration is to have "struck the fashion" and "being in the market in time," as sometimes the delay of a week has caused the goods shipped to be reduced to almost half value. Then, too, arises the question whether there is urgency in filling the given orders. In this case more hands are employed, more hours of work required, more looms are set to work, and consequently more pattern-cards are needed, the warp is necessarily beamed shorter, and becomes more expensive through increased waste, and on the whole more money is spent in executing the orders than when there is time given the manufacturer.

Many of the questions which are of such vital importance to the manufacturer of fancy dress goods never trouble the manufacturer of staple goods. He is seldom subjected to the whims of fashion; he knows in advance how much a piece of cloth will cost him, sale or no sale.

It is a well-known fact that scarcely two manufacturers here pay for their labor alike, or quote the same price for making the same piece of goods, as will be seen from an extract from a letter I received from a member of the firm of J. J. Wyson & Co., one of the most respectable firms in Chemnitz. Among others he says:

Regarding the way in which I govern the prices of my purchases, I beg to say that they depend a good deal upon the prices of raw material. The London wool sales have a great effect, as is the case now; with a decline in London the prices decline here. A great deal depends, also, upon the state of business in Germany. They all like to sell their goods here, but if business in Germany slackens they much prefer selling much below market price to America to throwing the goods on the market in Berlin, Leipsig, Hamburg, or Frankfort.

I find that certain manufacturers are especially well adapted to certain articles. If you send a sample of a plain cloth to four different manufacturers, you will sometimes receive quotations varying as much as 20 per cent. This arises from the fact that some manufacturers will only use yarn from the best of spinners, which always maintains its price better, whereas other manufacturers will buy yarns of an obscure spinner much below price. The same refers to dyeing by Hirsch (one of the best and most experienced dyers), whereas others will go to a smaller dyer in the suburbs, and produce at a smaller expense quite a good-looking piece of goods.

There is a marked difference also in the employment of labor. One manufacturer, for instance, will seek to retain his workman during the so-called "dead" season, which occurs periodically twice a year, and

continues from three to four months at a time, by supplying them alternately with such odd jobs as he may have or devise for the purpose. He frequently loses money by this, but it serves to keep skilled labor at his command for use when the busy season commences.

Another will discharge all the help he has, save such as he absolutely needs, leaving them to fare as they can, knowing that they will scarcely be able to find employment elsewhere in the neighborhood, for the reason that during the dull season, when patterns are made for the coming season, manufacturers are extremely cautious about admitting "outsiders" into their factories, for fear of having their secrets betrayed. These precautions are observed until the orders have all been received, when there is less danger of having the goods imitated and of being undersold.

In view, therefore, of all these obstacles in the way of formulating such questions as would satisfactorily cover the field of inquiries contained in the Department's circular, even if the manufacturers did not object to answer them, as all but one, whose answers will be found in the subjoined report, have done, I have deemed it expedient to collect a number of samples of such goods as are made in this district, giving the number of weft and warp of each to the square centimeter, with the number of yards that can be made per day both by the hand and power looms, and the wages paid for making the articles per yard both by hand and steam.

I have also added drawings and sketches of the different machinery used at the power and hand looms, as well as of the looms themselves, giving a description of such looms, their use, &c.

HAND AND POWER LOOMS.

In spite of the fact that a power-loom produces from three to five times as many yards of cloth a day as a hand-loom, at a cost of from 2½ cents to 10 cents per yard less, and the comparative cheapness of running it (about 47 cents per day), there are still above 20,000 hand-looms of all descriptions in use in Saxony, and of these about 13,000 fall to the Chemnitz district alone, and several of the largest manufacturers here have their goods made by them exclusively, while others employing power-looms in their factories still employ hand-looms outside.

It can be safely said that two-thirds of all the dress goods made in this district are made on hand-looms. The reason for this is obvious. There is a certain class of dress goods which can only be made by hand-looms, and as long as new fashions are made the hand-loom will hold its own against all competition. The power-loom gives a more equal and finer finish to the texture, but there is a subtlety in the touch of the human hand which the machinery can never attain and which in the fabrication of figured goods is of such great importance. Added to this, hand-weaving, like many other hand industries, has a powerful ally in cheap labor, and perhaps the only one which machinery will never completely overcome.

It cannot be denied, however, that the power-loom is subjecting the hand-loom to a hard struggle for existence, especially the older style of hand-looms, and that the prospects of so-called "master weavers," who have only learned to work at them, are becoming more hopeless every day.

In 1875 there were no less than 4,519 of these "master weavers," each employing from one to three and even ten journeymen in their own houses. In those days from almost every house in Chemnitz and from

every window issued that peculiar rasping sound as if hundreds of gigantic grasshoppers were chirping within. The introduction of machinery, however, imposed conditions upon these weavers which they found the more difficult to meet the more the machinery was improved. The plainer goods were made on power-looms, and work in the factories was found to be more remunerative. Instead of giving work to others, they were gradually compelled to seek work for themselves. The independent "master" soon fell into ranks with the dependent factory hand, but as he grew older and his eyesight failed him he was replaced by younger and more active hands, and what once promised to become a well-to-do citizen in his old age now bids fair to become a burden upon the community.

Those who had means of procuring the newer Jacquard contrivance or even the improved "leaf" or "shaft looms" managed to eke out a subsistence, and the fact that the manufacture of fancy goods was exclusively engaged in not only saved the hand weavers from total ruin, but made for Chemnitz a reputation all over the world.

CONDITION OF LABOR.

Even in England, "Chemnitz dress goods" are holding the market against native productions, and in France and Russia they are gaining ground more and more. The extension of trade, however, has not worked a change in the condition of labor, as one would suppose would be the case. On the contrary, the weavers seem to be worse off to-day than they were five years ago; wages have materially declined, owing to the great competition. The seasons of work are getting shorter and the "dead" seasons longer. The chances of saving something outside of the regular work are becoming less. Formerly a weaver would make such articles as toweling, cheap table-covers, &c., and either dispose of them to manufacturers or peddle them about the country; but to-day these articles are made in large quantities in factories at far cheaper rates.

The manufacturers themselves are doing much to help them; in many instances they advance them the money to procure the necessary harness to their looms, and supply them with work whenever they can. There are many beneficial and relief societies. The Imperial Parliament has also enacted laws looking to the insurance of workmen of all kinds against accidents and sickness while at work, but all this seems to be of little avail. The condition of many of these weavers is anything but promising.

To meet any possible suspicion of exaggeration, I embody translations of two communications from such "master weavers" in question whom I know to be sober, industrious, and credible persons.

In giving me a statement of his earnings and expenses during the last five years, Mr. Selbmann, a master, says:

I am sixty-two years old, and have worked for one factory about twenty-five years uninterruptedly, being idle during the "dead" season like the rest. On an average I earned about \$3 a week. For the last five years I have not been able to make more than \$1.80 per week, owing to the long pauses and to the work being given to younger men. The more difficult work is taken from us masters as we get older, and most of the plainer work is done on power-looms, which we do not understand how to work. In former times we managed to lay by a trifle for a rainy day, but this has long ago been consumed, and now many of us old masters see nothing before us but misery and poverty.

Regarding my expenses for myself and wife for one week's subsistence, I have put

down the amount expended by us during the time we have work; at other times I do not spend so much.

	Annually.
For two small rooms on the second floor we pay.....	\$21 09
Communal taxes, &c.....	1 85
Sick rates.....	1 78
Income tax.....	23
For clothing for two.....	9 52
For shoemaker.....	4 75
Rentage of potato field, with seed.....	2 97
Total.....	42 19

My weekly expenses are:

	Cents.
Bread.....	29
Oil.....	7½
Coal and wood.....	29, 7½
Coffee.....	7½
Meat.....	17½
Vegetables, salt, &c.....	17½
Butter.....	11½
	61 82
	117
	103 98

I sometimes have odd jobs to do, and the little patch of ground which I rent for 12.50 marks, including seed potatoes, provides us with potatoes during the winter, so that the sum set down for vegetables would fall away. When I have no work, our expenses are less, of course, as then we live exclusively on dry bread and coffee.

Mr. Kunze says:

I work in a factory, and earn from 12 to 14 marks per week. During the dull season I have nothing to do. My earnings on an average would be about 9 marks per week. My wife also works in a factory, earning 7 marks per week, but her earnings would not amount to 3 marks per week on an average, owing to the long periods she is out of work. Our condition is considered a good one. We cannot save much, but we live. Our expenses for living amount to about 7 marks a week, and the rest goes for rent and clothing, &c.

These statements would seem to be borne out by the contents of the letter from the firm of J. J. Wyson & Co., which I quoted before. They say:

* * *. A skilled workman who can make difficult work, such as velvet, plush, or broché, will make much more money than a weaver who is less skilled and makes plain Jacquard goods. The wages are not so that anybody can save much, but they bring in enough to live on.

The master weaver goes to the manufacturer and gets his yarns for warp and filling, with a ticket giving all explanation for mounting the loom. He does all the beaming, warping, and spooling, and delivers the goods to the manufacturer. The "Hausknappe" (journeyman) gets from the wages which the master weaver collects, and which are entered with a book, at the rate of 1.70 marks (44½ cents) from every 3 marks (71½ cents); whereas the "Geselle" (unmarried journeyman) gets only 1.60 marks (38 cents) from every 3 marks (71½ cents). The difference between 1.70 and 1.60 marks—10 pfennigs (2 cents)—accounts for the cost of lodging at the weaver's house. They both have to find themselves. The "Hausknappe" takes his meals at home; whereas the "Geselle" has to buy his own food, which the weaver's wife prepares for him. The wages which they earn change according to the kind of goods they make and to the state of business.

I have quoted these statements and this letter at such length more for the purpose of showing how difficult it is to find out the cost price of "labor by the unit" in this district than for any information they may contain with regard to the condition of such labor.

There are periods when a weaver will work for next to nothing, yet he will not hesitate to ask the highest possible wages as soon as he finds his labor to be in demand. The relations between employer and employé, however, are such that difficulties never arise. It is a fact worthy of mention, that strikes are unknown in this consular district.

HOUSING OF THE WORKINGMAN.

This may be partly due to the consideration for their workmen during the dull season, on the part of most of the employers, and partly to the sober and peaceable character of the workmen, of whom nothing but the most favorable can be said. They are neater in appearance, cleaner about their persons and in their dwellings, better behaved, and bear their hard lot more patiently than any people of their class I have ever seen, and as for industry and sobriety, I think they compare most favorably with any on the Continent. Although less is being done here towards the improvement of dwellings for the laboring classes than in England, or even in Northern Germany, they live quite as comfortable, and, considering the way in which they live, much more cleanly.

As a rule, the tenements are two and three stories high in towns and large villages, and generally hold three, four, and even six and seven families, each family occupying two or three rooms, but a family that can afford three rooms is considered very well off.

There are scarcely any kitchens attached to these apartments, the cooking being done in a large iron trunk-stove, about 6 feet high and provided with ovens. This stove is a permanent fixture of the house, and is provided by the landlord. Even in families well situated, such stoves are made to perform the double task of warming the rooms and cooking the meals.

In the room adjoining stand the beds, sometimes as many as four in a row, the larger room being reserved as a work-shop and sitting-room combined.

Among the poor families, however, one room is made to do service as a work-shop, sleeping, eating, and sitting room, and in the mountains on the Bohemian frontier one frequently meets with two families inhabiting one room.

At one place I counted eight persons, men, women, and children, comprising two families, all living together in a room measuring 12 by 14, a chalk line drawn down the wall indicating the partition. On each side of this line stood a hand-loom, a table, a bed with a truck-bed underneath for the children, two chairs apiece, and a bench, one stove serving for both families.

Crowded as was this room, there was absolutely no appearance of poverty, as we understand the word in America, and its attendant evil, squalor. The floor was white and clean, the tables bright from frequent scouring, and the beds, though covered with a printed calico of somber blue, which gave them the appearance of being in "half mourning," looked snug and nice; all in all, the room looked far more inviting than a description of it would seem to make it.

FOOD.

Here, however, as everywhere else in Saxony, among the poorer classes, was that all-pervading smell of coffee. Coffee is the universal beverage in Saxony. Coffee and bread, bread and coffee, the bread dry and the coffee black and bitter, three times a day, with an occasional potato boiled for dinner, frequently make up the sum total of a family's subsistence for a week at a time. Sundays they may have a half pound of meat, but if the family is not too large that half pound is divided between two dinners.

Horse meat is extensively consumed by the laboring classes, the prices ranging from 4 to 5 cents per pound. I can also vouch for the fact that

a large number of dogs are annually killed for consumption. Dog meat is publicly exposed for sale in the markets, and I am informed that many well-to-do people frequently eat it in preference to mutton, and the fact that it is sold from 1 to 3 cents per pound more than horse meat would seem to bear out this assertion. "Roast dog and dumplings" is frequently advertised in the papers by keepers of restaurants, and the Chemnitz papers contain a weekly statistical account of all the horses and dogs killed for consumption in that city.

Dog meat is supposed to possess a curative power in cases of pulmonary complaints, and to judge by the number annually killed in this neighborhood, the disease must be widespread.

From all that I was able to ascertain in the matter, I should think that the statements made to me by Mr. Selbmann regarding his earnings and his expenses for living during the year may be accepted as representing the average earnings and expenses of living of two-thirds of all the weavers in Chemnitz, if not of the whole district.

MACHINERY.

The hand-loom in use are divided into three classes, the "shaft-loom," the Jacquard loom, and the shaft-machine loom; of these two-thirds are shaft-loom and one-third Jacquard looms. There are many different contrivances, such as the center-march, single and double, hollow, &c., but the most general looms are the shaft, Jacquard, and shaft-machine looms.

Upon the shaft-machine loom (Plate I) are made the more complicated articles in every conceivable pattern of figured velvet cr pe, damasks, gauze, &c., as well as the plainer textures, such as linens, twills, satins, &c. The figures in the pattern must not, however, describe curved lines, as in the case of flowers, vines, leaves, &c.

The loom itself is the ordinary hand-loom with the shaft-machine attached. Upon the frame *a* are placed the rests *c*, upon which the shaft machine *M* is fastened. Attached to this machine hangs the harness or mounting *d*. The number of harness varies with the manner of cross weaving desired, each harness increasing the variety in the combination of the shed. There are looms with as many as twenty-four harness, but they do not find favor with the weavers, because they are more liable to get the warp entangled. On leaving the warp-beam *e* the threads of the warp are passed through the heddle-eyes *i* before they are passed through the sley *o*, each harness holding a certain number, according to the pattern desired, and are lowered by means of the treadles *j*, each tread lowering one harness, and changing the construction of the shed by sinking a series of warp-threads. Fig. *f* indicates the position of the batten; *g* and *h*, the bar and cloth-beam, over the first of which the cloth passes after leaving the breast-beam, to be rolled upon the cloth-beam. Fig. *u* represents the pattern card, a series of connected cardboard strips, perforated like those used at the Jacquard machine, according to the pattern to be woven in the goods. As a section of this pattern card enters the machine *M* a number of needles in the machine pass into those holes in the card, which describe a part of the pattern to be woven, and prevent that harness which holds the warp-threads that are to appear in the design from sinking, the shuttle then passes *under* instead of *over* them, every section of card gives the harness a different movement until the pattern is complete, by which time the section forming the beginning of the pattern has come round to its former place in the machine and the movement begins anew.

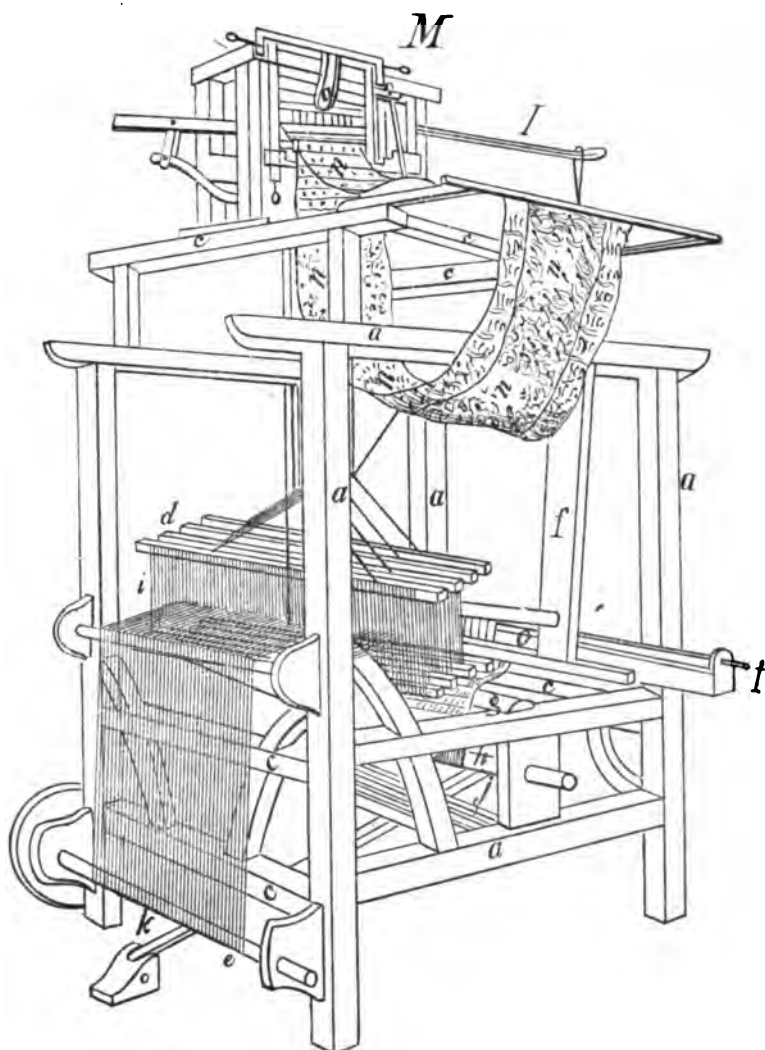


PLATE I.—Hand Jacquard loom (shaft machine.)

A loom of this kind costs about \$20 to \$23, including the tackle, and upon it an expert weaver may earn on plain articles on an average 35 to 47 cents per day, and for more complicated and difficult work, about 53 to 59 cents per day.

Plate II represents the single "contremarsch" contrivance as used on a simple shaft-loom. It is so arranged that it can be set upon the loom by means of the cross-bars *a*. The leaves *b* are attached to the mounting or harness *c* by means of cords or backing. The harness is attached to the short cross-treadles *d*, which have their pivot at the side of the loom in the so-called cross-treadle holder *e*. The long cross-treadles *f* have their pivot directly below the short cross-treadles and in the same holder, and are connected with the leaves *b* by means of long cords. About a foot below these are the treadles *g*, which are connected with the cross-treadles by stout cords *h*, also called cording. The arrangement of this cording depends entirely upon the kind of cross-weaving desired.

Upon looms mounted with this contrivance the plainer goods, such as linens, twills, and satins, but in every conceivable pattern, are made, the patterns depending upon the number of harness or tackle used, and the more harness used the more complicated can the pattern be made.

The wages earned at one of these looms are the same as those earned at the shaft-machine loom, the quantity of goods turned out in a day depending entirely upon the pattern and the number of warp to the square inch.

Plate III represents the Jacquard loom. The different parts composing this loom are the same as those of the ordinary shaft-loom. The cords or harness *m* descend from the machine *r* and pass through the harness or cumber-loom *n*, to which the mounting or heddle-tackle *o* is attached. Instead of lifting all the warp threads in a harness, as in a shaft-loom, the Jacquard machine is so arranged that each single thread can be raised at will by means of the tackle or healds, through the eyes of which the warp threads are first passed before they are passed through the sley in the batten. As each single cord rises it takes with it the thread passed through its heald, so that the variety in the composition of the shed, or that part where the shuttle passes to and fro, is absolutely endless.

Although these machines differ in construction and size, the effect is the same, only that some systems are better adapted to certain qualities of goods than others.

There is absolutely no figure which could not be described on this machine, and no kind of texture which it will not produce, from the heaviest carpets to the finest lace, and from the most complicated Turkish patterns to the plainest of plain cloth. The size and combination of the pattern alone depending upon the number of cords used in the harness, which runs from 200 to 1,200, and are, therefore, called 200, 400, 600, 800, or 1200 machines.

In making lace curtains, several of these machines are put together on one loom, and each of these machines is made to work out a distinct pattern, or to work a part of the same pattern with the others, as the case may be.

For want of a better, I have added a view of an iron Jacquard machine, such as are generally used on power-loom. The sketch here presented is a machine with double action, but the system and working of this machine do not in any way differ from those made of wood and used on hand-loom.

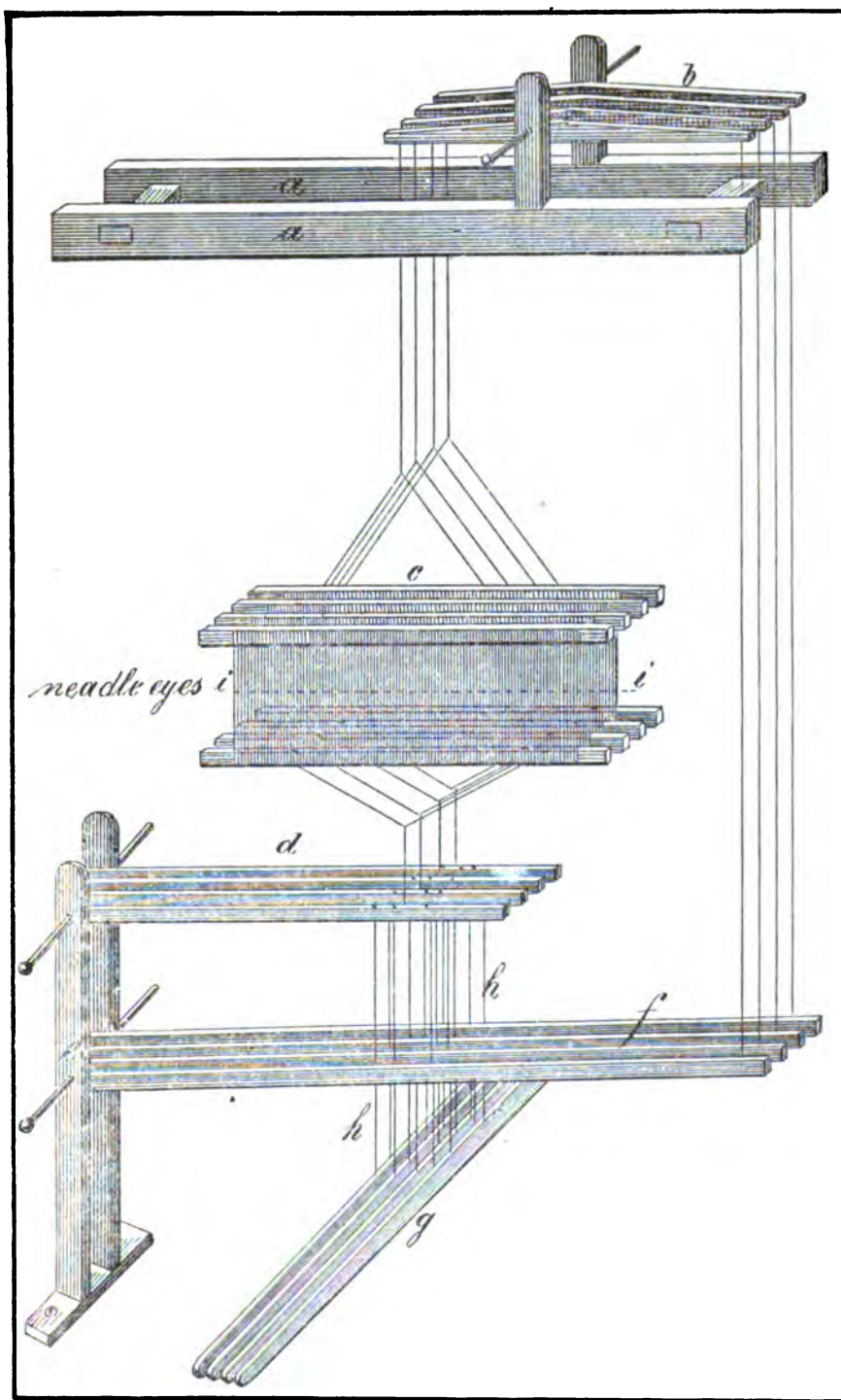


PLATE II.—Single "contremarsch."

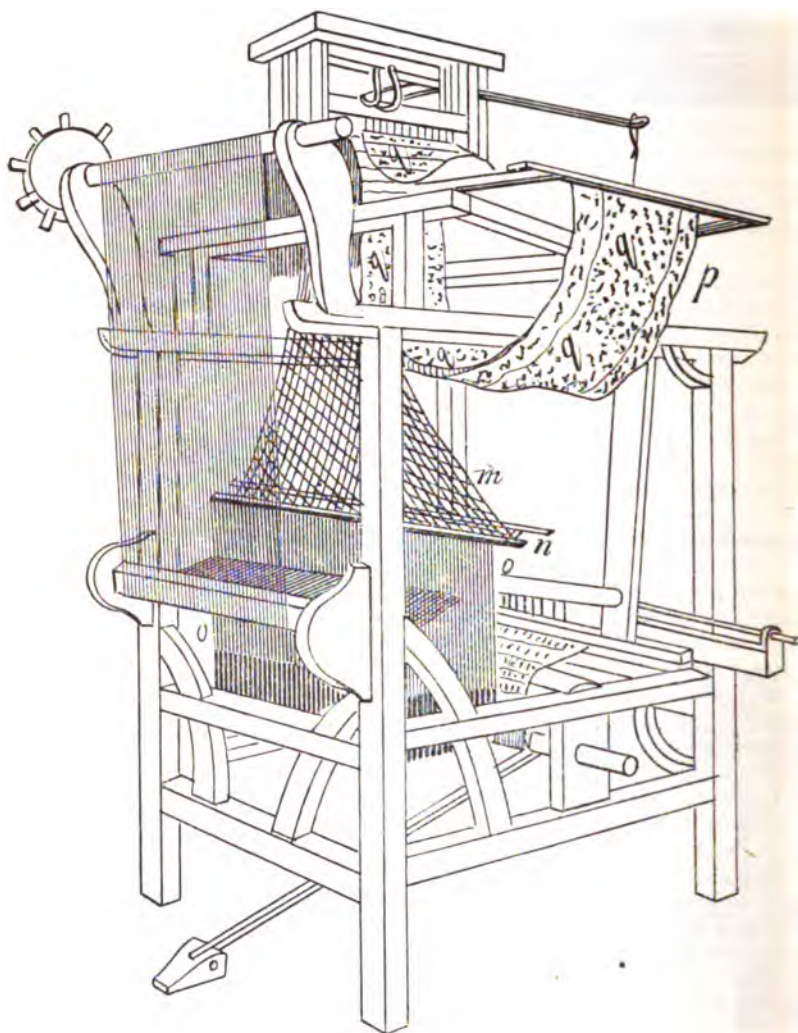
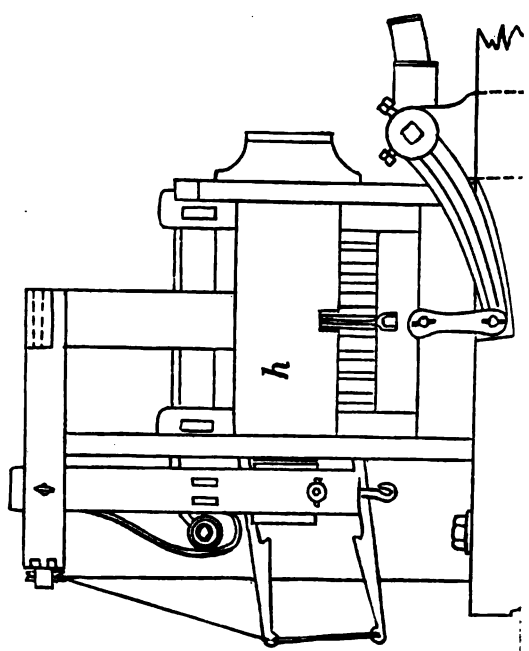
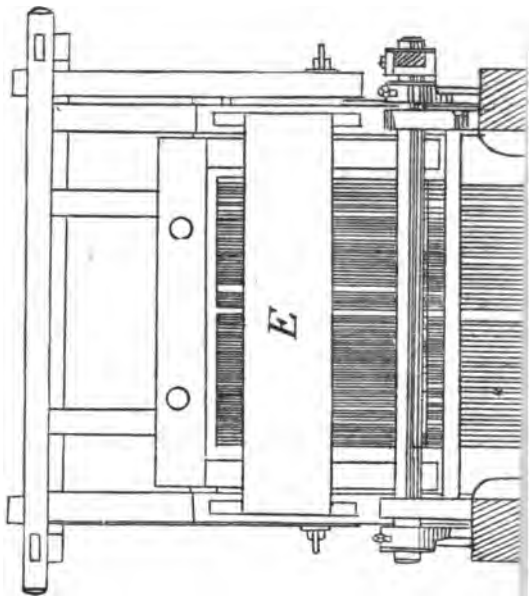
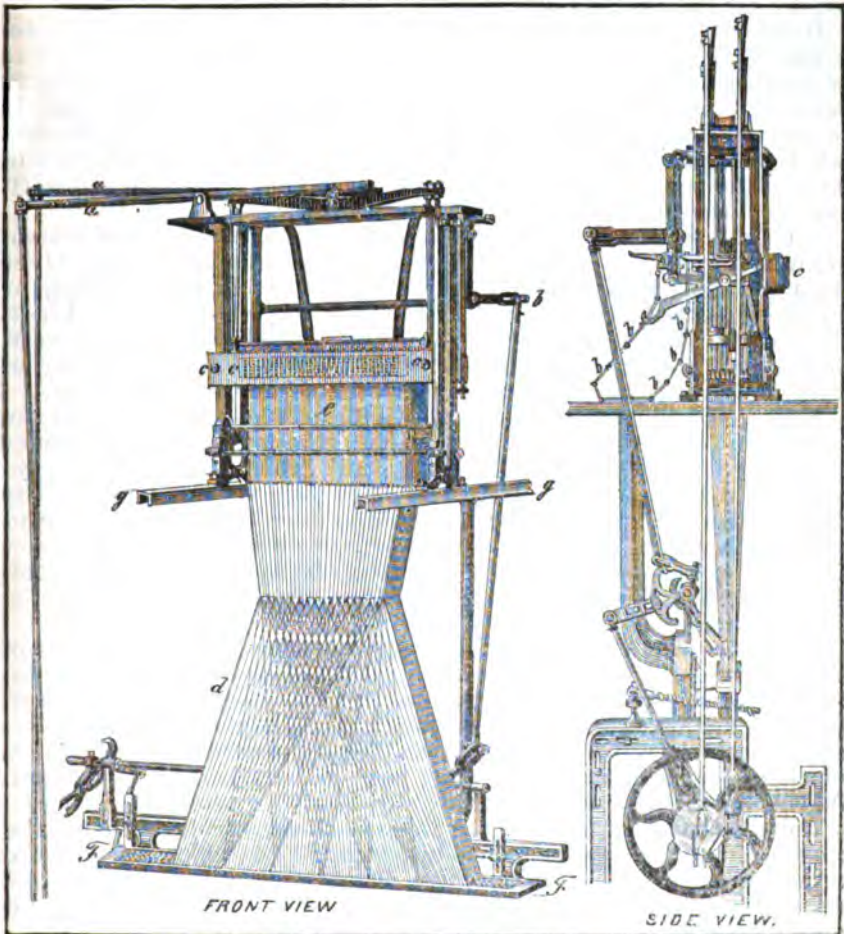


PLATE III.—Jacquard loom.



A very important factor in weaving goods on the Jacquard looms are the Jacquard pattern-cards. In fact, the goods could not be woven without them. Those cards were formerly made of wood, but now stout card-board is used.



Jacquard machine for power looms.

MAKING PATTERN-CARDS.

The making of pattern-cards is an occupation by itself, just as weaving or any other calling would be, the people engaged in the business being called "Kartenschläger" or Jacquard card-beaters. There are several machines used for preparing these cards, but the sketches given below represent the two machines most in use.

The principle upon which this machine works is identical with the working of the Jacquard weaving-machine. The lifting-wires are placed in the oblong box *h*, from which descend cords *f*, and are connected with round iron rods, called needles, in *d*. On the side of this box *d* is the so-called needle-board *g* against the inside of which the strip of card-board to be punctured is placed where a turn upon the crank *i* forces

the needles through the card-board into the needle-board, the cords *f* giving each needle the desired direction or position.

Before, however, the card-board strips are ready for this process, there are other and more complicated manipulations necessary which require the most careful attention.

It is first necessary to make a sketch of the pattern of the goods desired. This sketch, which gives the natural size of the figures in the pattern, is next transferred to pattern or design paper, where it is greatly enlarged, and where the position of each warp and weft thread is clearly indicated by different colors. As this design proper is divided into small squares of about one-half inch in diameter, and these again, into smaller squares, the lines running up and down indicate the weft, and the lines running parallel indicate the warp.

After the pattern is finished, it is placed upon a frame called a lashing-frame, which is about 7 feet high and from 8 to 12 feet long. Over the top of this frame, run the cords connected with the reading or punching machine, as seen under *a a a*. At intervals of about 4 feet, short cords hang down from these cords, which represent the weft-thread in the texture, and correspond in number with the number of cords on the Jacquard loom upon which the pattern is to be woven.

As the colored spots on the pattern indicate whether a thread in the warp is to be lifted or remain stationary, a cord is passed under or over and at right angles with the hanging cord. This manipulation is repeated until the whole pattern has been interwoven. Those cords which govern one or a series of punching-irons in the machine, and which indicate the composition of a shed, are then gathered together. The strip of card-board which is to receive the impression of the position of the first shed in the texture is then placed behind the needle-board *G*, and punctured.

The puncturing of the succeeding cards is done by a different set of punching-rods, so that each strip of card-board shows a different combination of holes. After the whole pattern has thus been punched off, the strips are joined together by threads and laid before the proof-reader, who corrects the errors by pasting small pieces of card-board over holes which are out of place, or punching such as may have been omitted. When this work is finished the cards are ready for use on the looms.

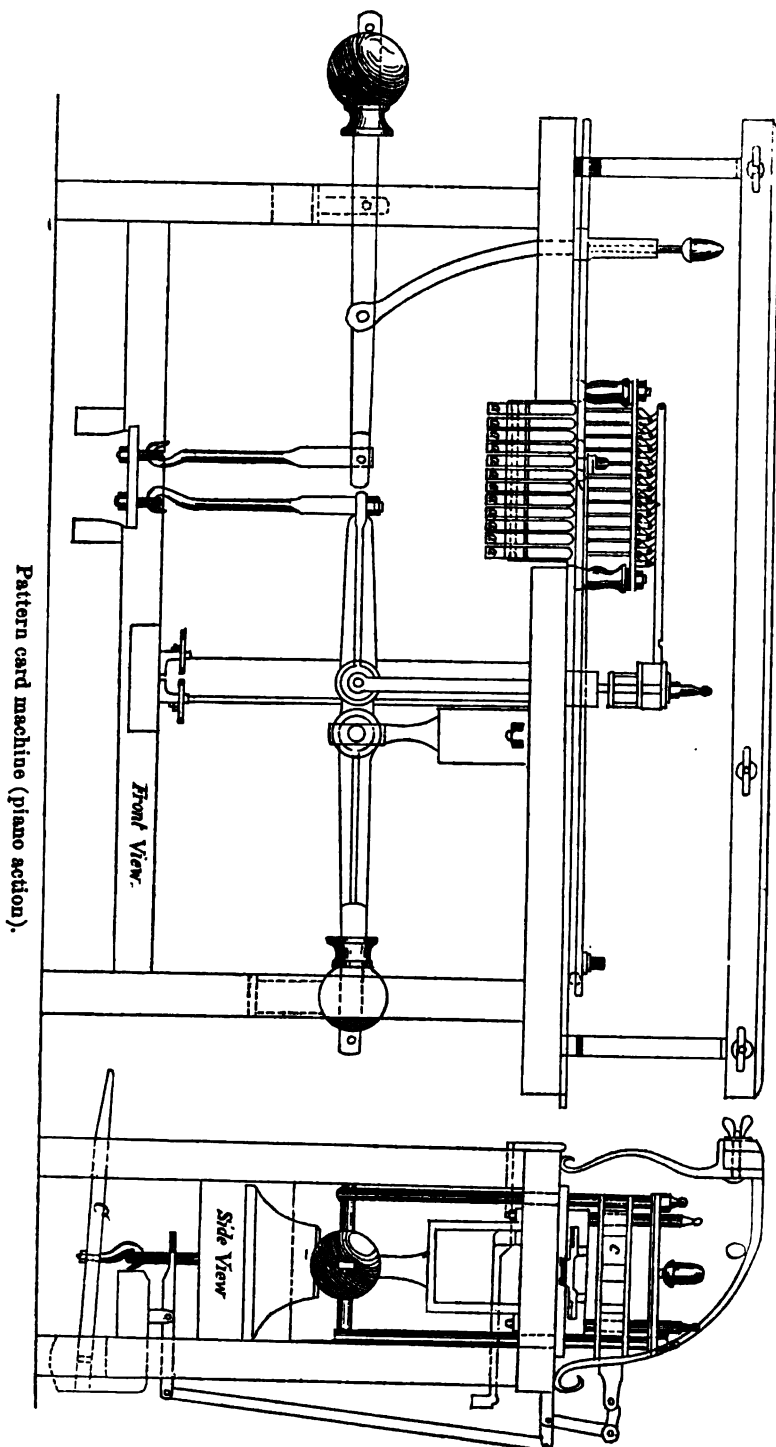
The other machine is called the piano-machine, so called because the process of punching cards is done by pressing keys, which resemble the keys of a piano, but as this machine punches one row of holes at one time, instead of a whole card, as does the larger machine, it is used more frequently where any one set of cards is desired.

The operator reads off the pattern by pressing a key, *a*, and treading down the treadle *b* which governs the needles in *c*.

In order to better demonstrate the preparation of the Jacquard cards, I have had added a sketch of the pattern in its natural size, with an enlarged pattern, and a piece of the finished goods, as well as the first section of the pattern-cards themselves.

This sample of goods is made upon a 400 Jacquard machine, and numbers in the sley 12 gang. The word "gang" signifies the number of threads of warp contained in 6 inches (Saxon), each gang numbering 40 threads, or 480 threads to 6 inches (Saxon)—that is, while the goods are yet upon the loom, they shrink, which shrinkage is frequently increased in the dressing of the goods, and sometimes, too, it is decreased according to the methods of dressing employed.

The Jacquard hand-loom, with a whole set of harness, cards, &c., costs from \$47 to \$95; and upon it a skilled hand can earn, on plain



goods, from 65 cents to 71 cents per day, and on complicated goods, from 77 to 86 cents.

The quantity of goods made per day depends entirely upon the quality and number of warp and weft to the square centimeter.

Of stuffs, for instance, weaving 110 centimeters in width, and containing 23 threads "rayé" and 23 "travers" to square centimeter, he can make about 7 meters at about 7 cents per meter.

More complicated goods measuring 110 centimeters with 20 rayé to 34 travers, square centimeters, about $3\frac{3}{4}$ to $4\frac{1}{2}$ meters, at about 14 cents per meter.

Simple Jacquard goods, measuring 110 centimeters, 26 rayé to 28 travers to the square centimeter, about 6 meters, at 11 cents per meter, and more complicated goods of 110 centimeters in width with 34 rayé to 65 travers to the square centimeters, about $2\frac{1}{2}$ meters per day, at 35 cents per day.

It must be borne in mind, however, that the manufacturer only supplies the yarn. The weaver must spool, beam, shear the yarn, and mount the loom himself, a work which frequently requires two and even three days. For this work he receives no pay, and consequently loses about 12 to 15 per cent. of the above stated wages.

FLANNELS.

The manufacture of flannels is another industry which deserves special mention. By far the largest quantity of flannels made here is made in Reichenbach, a town of about 20,000 inhabitants, within this district.

There is one firm there which began exporting flannels to the United States in 1852. Since then, however, quite a number of factories have been erected in that town, which export their flannels to every known country under the sun.

The method of making flannels differs somewhat from that of making lighter textures, the yarns used for the purpose being those known as 18, 20, and 24, which numbers signify the number of skeins or knots to the pound.

In order to make this yarn more adaptable to the purpose of weaving into flannels, it is impregnated with an oily substance in spinning to the extent of 15 per cent. The yarn is then treated to a thin sizing bath, and mounted on the looms, and pieces of 50 to 60 meters woven at once; these pieces are cut into smaller pieces for table covers of any required size.

These covers are then stretched upon the embroidering frame, and embroidered, the process being very much like that done on a sewing-machine.

The most usual patterns being leaves, vines, and flowers, such as are seen in the accompanying samples.

As far as it was possible for me to ascertain the cost price of a piece of flannel of 50 meters, of the quality herewith inclosed, it would seem to be as follows :

290 skeins, 18 dyed yarn, at 35 cents per pound.....	\$5 75
300 skeins, 20 dyed weft, at 35 cents per pound	5 35
Wages for warping, spooling, sizing, &c.....	40
Wages for weaving	2 85
Dyeing 890 skeins	1 54
Finishing	78
Card-board for rolling of goods, paper for packing same.....	9
Expenses for salaries, rent, lights, &c	70
Total.....	17 46

In the case of embroidered flannels for table and piano covers the outlay would be somewhat higher, owing to a greater amount of labor bestowed upon the articles and the silk and chenille used in the embroidery.

A piece of flannel, for instance, measuring 76 meters, would require in all about—

528 skeins of warp-yarns, at 35 cents per pound.....	\$9 15
490 skeins of weft-yarns, at 33 cents per pound.....	8 11
Wages for spooling, warping, and sizing.....	54
Wages for weaving.....	3 50
40 pounds of dye, at 15 cents per pound.....	6 00
Dressing.....	57
Cutting and imprinting pattern on goods.....	57
Silk for embroidering:	
On 8-4 covers, 0.8 kilo, at \$2.90 (single cover).....	2 28
On 8-12-4 covers, 1 kilo, at \$2.90 (single cover).....	2 90
Embroidering and preparing spools.....	1 95
Use of machinery, 10 per cent.....	46
Total.....	36 03

From a piece of flannel, measuring 76 meters, are made—42 table-covers 8-4 square, or 28 piano covers 8-4 square.

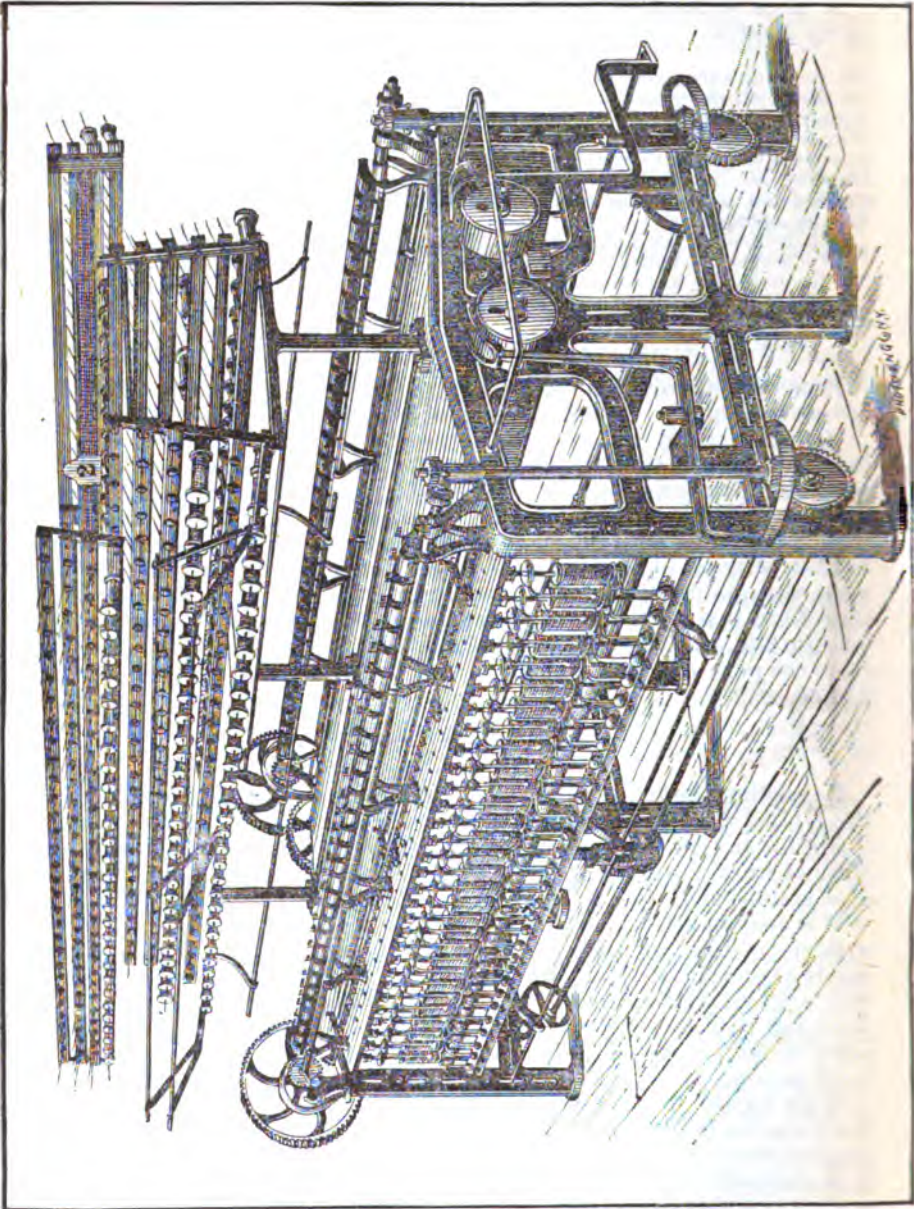
Owing to the great difference in the selection of the material for making flannels, and the attention given to its finish, &c., it is almost impossible to mention a sum that would represent the average price of labor by the unit in this branch. It would seem, however, that \$7.76 were a fair price for a dozen of 8-4 piano covers, and \$11.64 per dozen, 8-12-4, without embroidery, the price of such work depending actively upon the quality of material used. In the calculation, it will be seen that \$2.28 is set down as the price for embroidering an 8-4 cover with 0.8 kilo silk, and \$2.90 for an 8-12-4, with 1 kilo of silk, which would raise the price of a dozen of 8-4 covers to \$27.36, and that of 8-12-4, to \$34.80.

TAMBOUR GOODS.

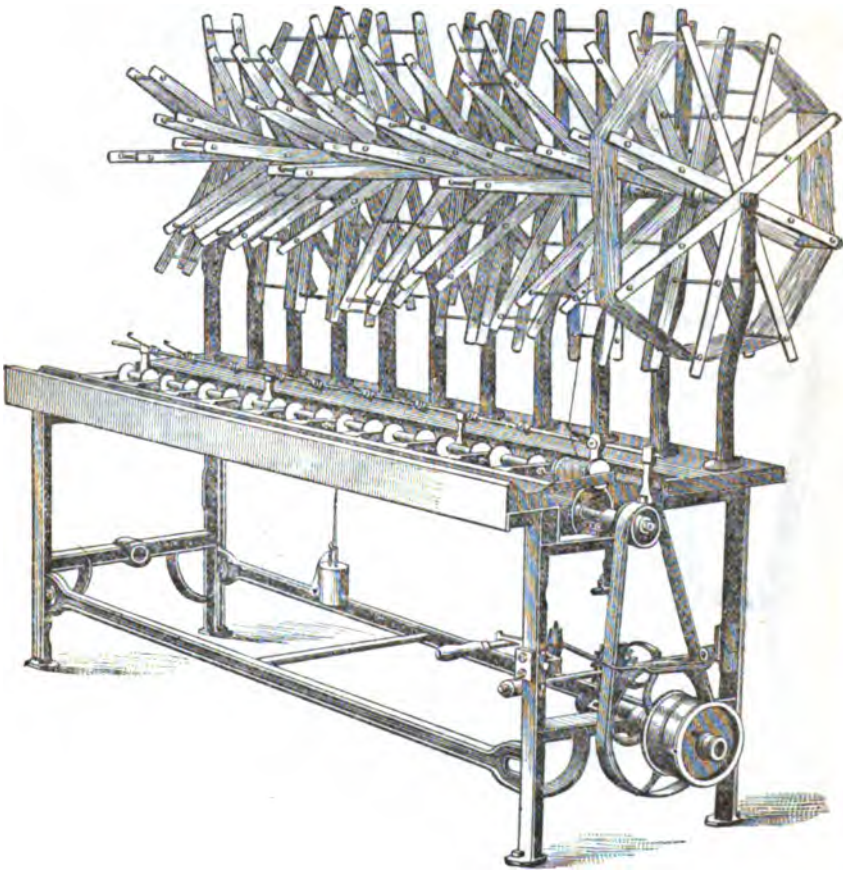
Regarding the tamboured goods, of which so much is exported to the United States, and of which I inclose several samples, I was unable to obtain any information, other than that up to a recent period this class of work was done almost exclusively in Saxony, but of late much of it is done at Berlin, where a better class of machines are used.

It is customary to tambour goods weaving about $4\frac{1}{2}$ meters at a time with a machine, as they are only able to embroider that amount of goods at one time. That which is done by hand, however, and there is still a great deal of hand-work of this class done in this country, is done and paid for by the piece, which usually measures 10 meters; the price in both cases ranging from 12 cents to 1.25 per piece of from $4\frac{1}{2}$ to 10 meters.

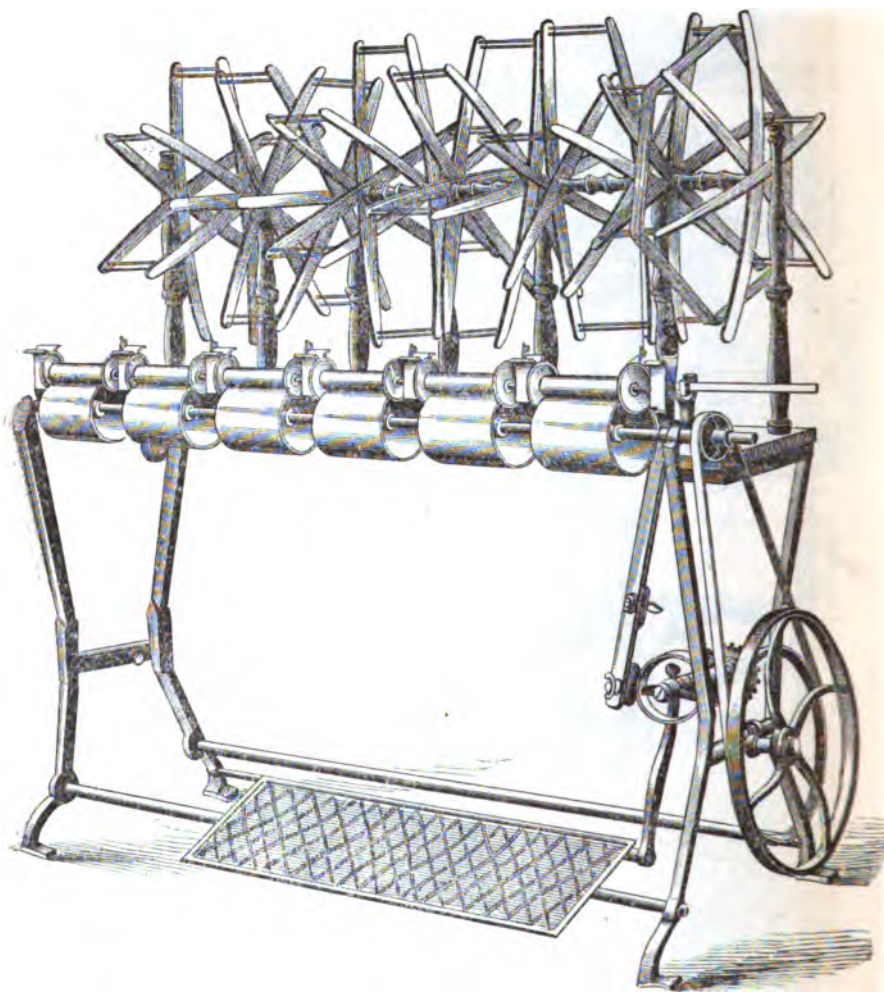
With regard to the power-looms and machinery of all kinds used in the factories here there are a great variety in use, but mostly improved English machines, the improvement upon them being German, of course. It is claimed, however, that there is very little difference in the working capacity of these machines, and a description of them would, therefore, seem superfluous. I have, nevertheless, collected a number of sketches of such machinery as is generally used here, which is made by a local manufacturer of very good repute, and beg to inclose them herewith.



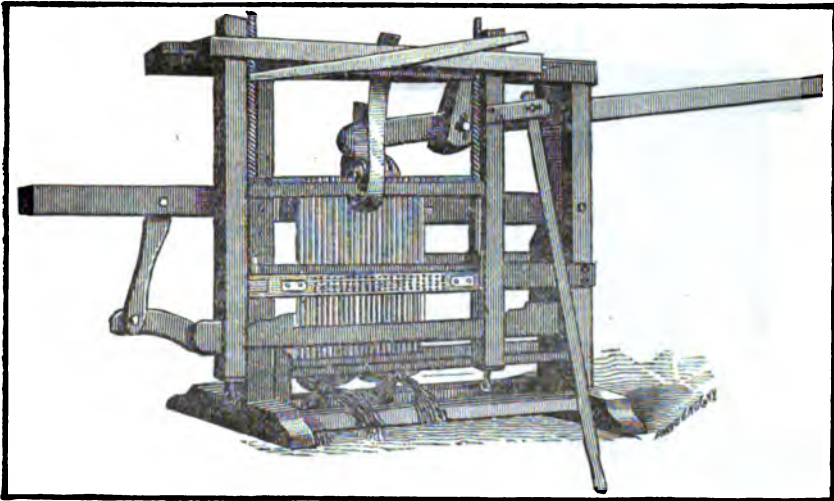
No. 1.—Twisting machine.



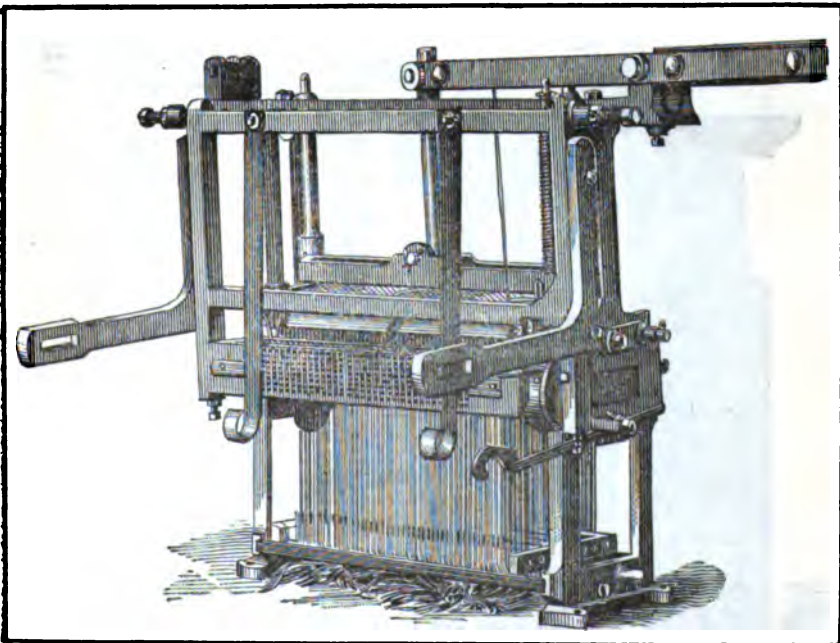
No. 2.—Spooling-machine for warp.



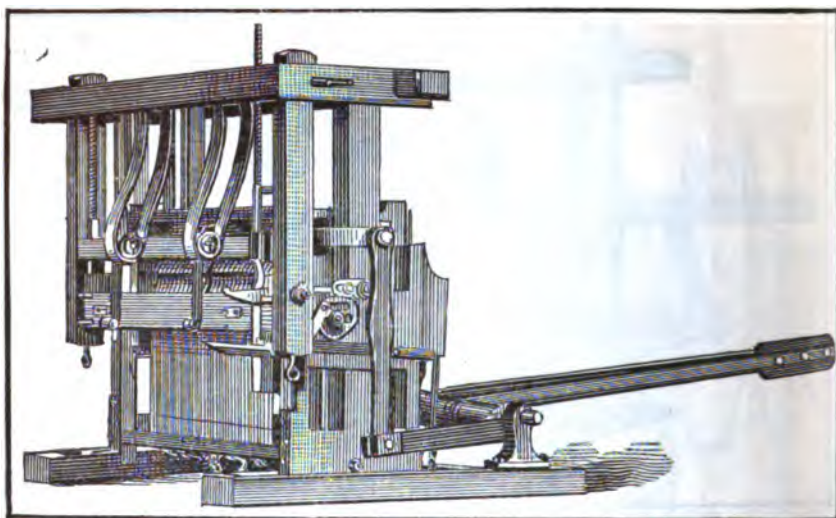
No. 3.—Spooling-machine for warp.



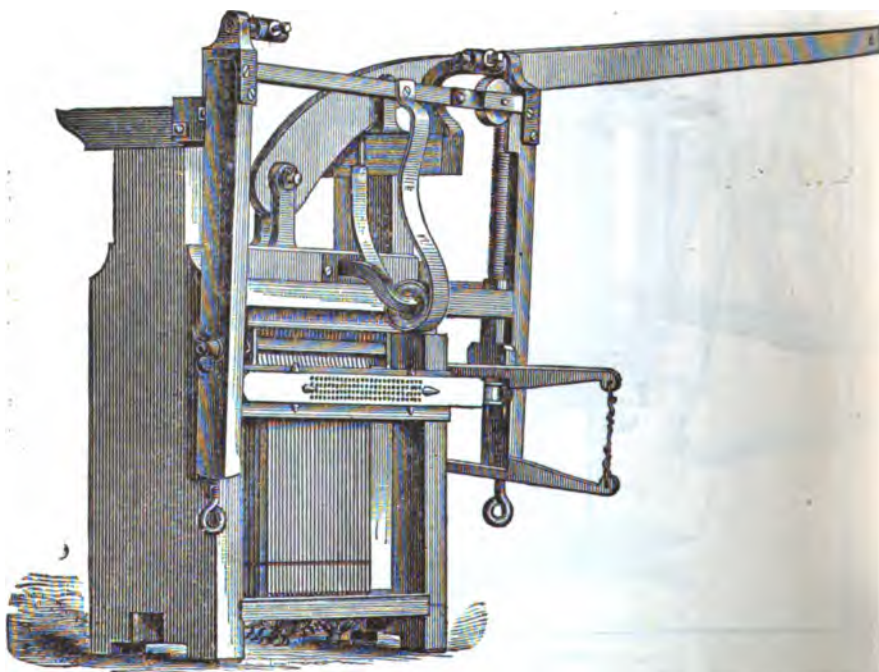
No. 4.—Shaft-loom for hand-weaving.



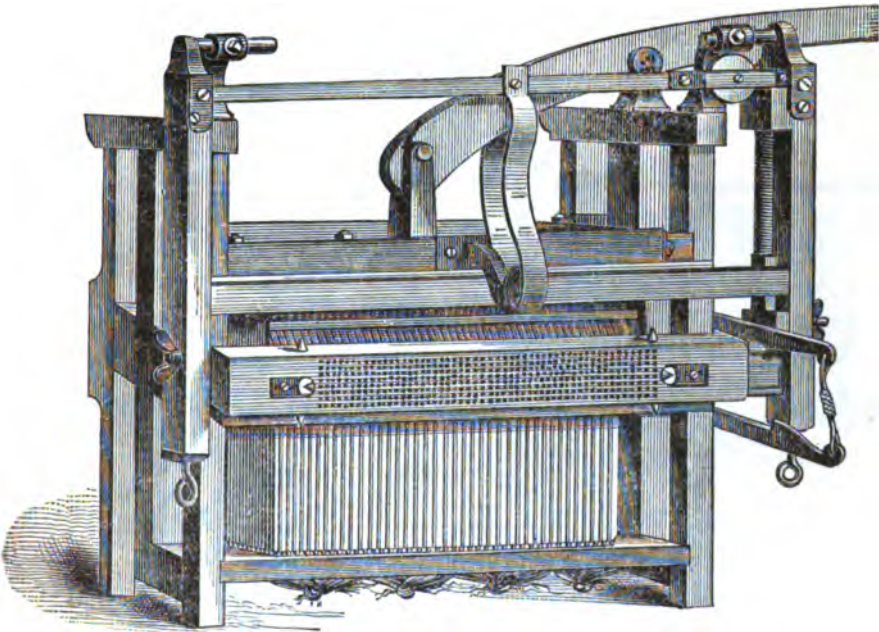
No. 5.—Iron Jacquard machine.



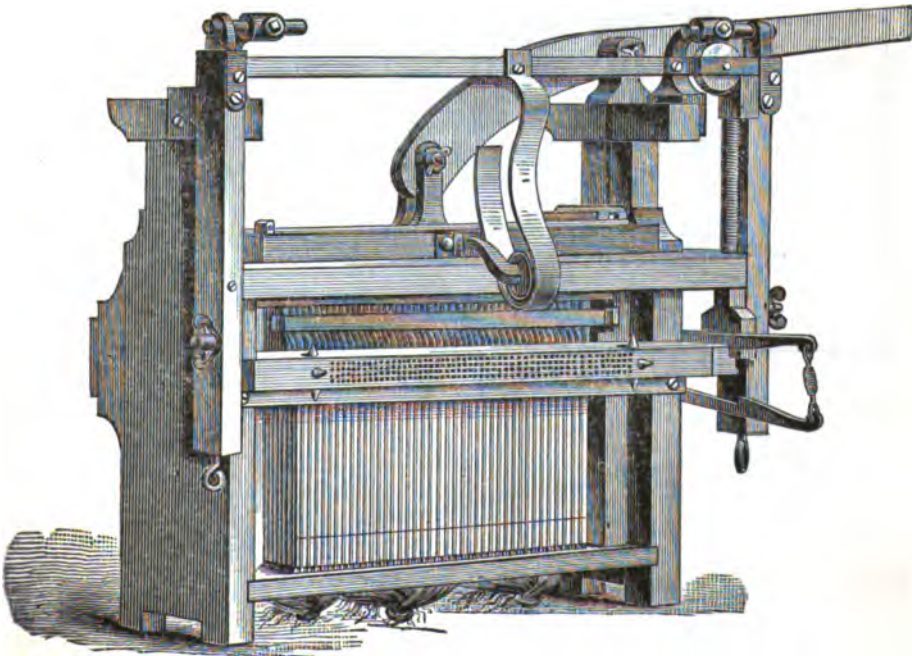
No. 6.—Jacquard machine (wooden frame.)



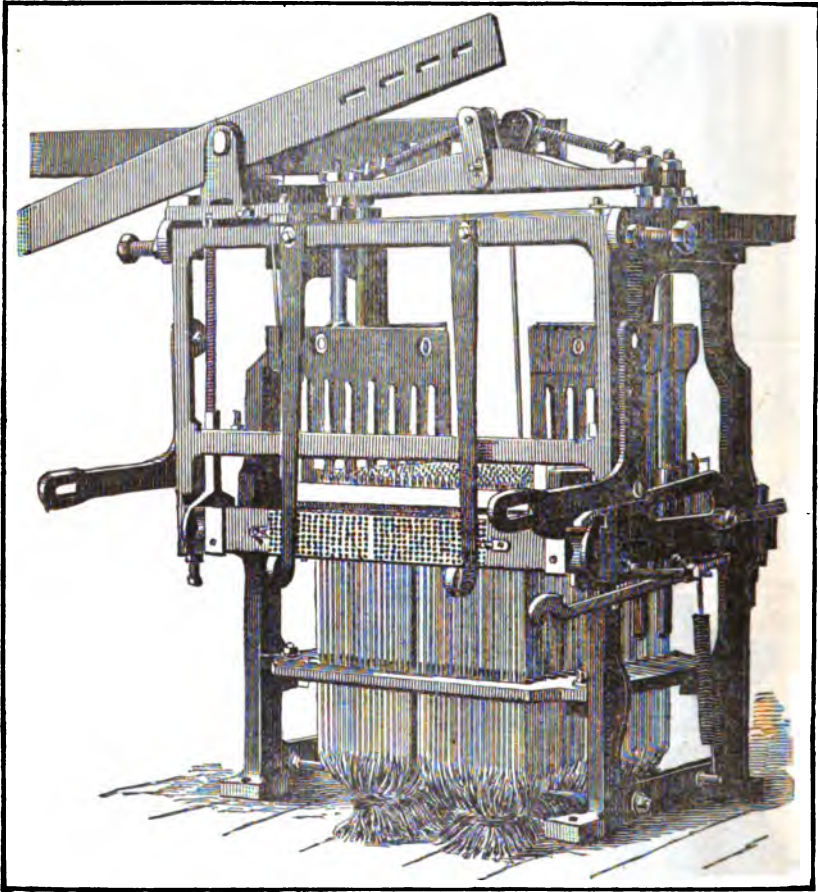
No. 7.—100 and 200 Jacquard machine (4 and 8 rows lifting wires.)



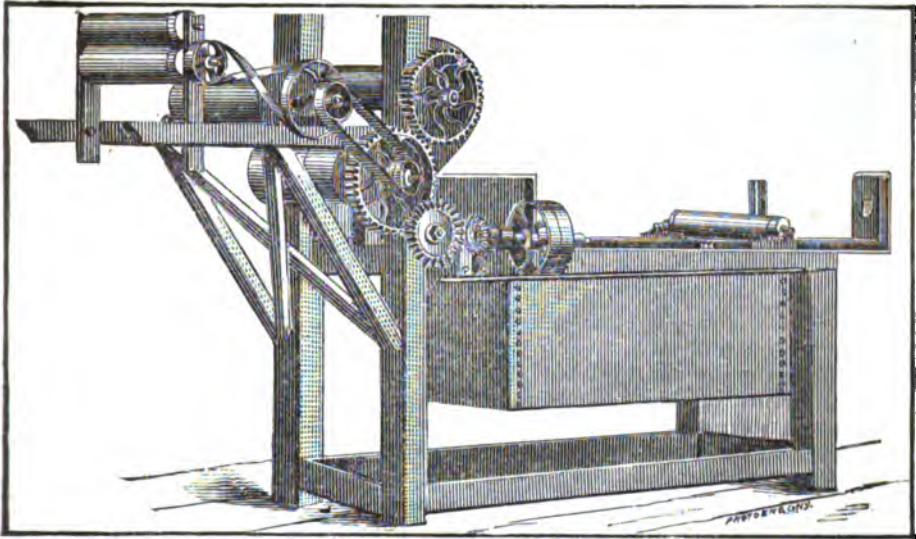
No. 7a.—Two hundred Jacquard machine (four rows of lifting wires).



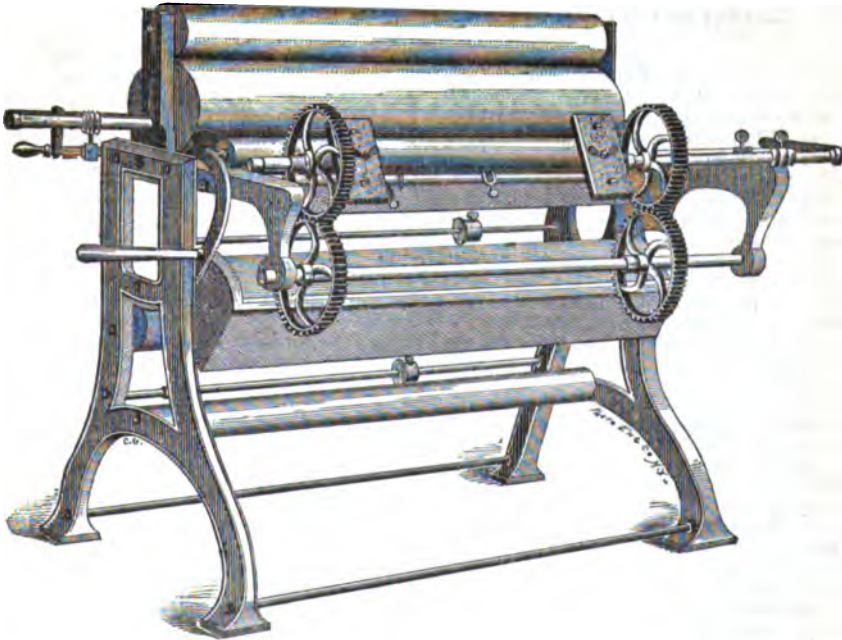
No. 8.—Four hundred Jacquard machine (band weaving).



No. 9.—English machine.



No. 10.—Sizing machine (porcelain rollers.)



No. 11.--Measuring and rolling machine.

There are several spinneries in this district, with about 75,000 spindles engaged in making the cheaper qualities of vigone, two thirds of the whole amount of which is exported to England, and but a very small quantity being consumed here in the manufacture of buckskins and the cheaper qualities of cloth. My request to be furnished with information of their working, and the prices and markets for their goods was refused, but I hope at a later date to be able to forward a full description of the spinning industry in Saxony.

In conclusion, I beg leave to inclose a specimen of artistic weaving which deserves mention from the fact that it is the most difficult of all loom productions. It will be seen that the folds or plaits are woven into the goods. This result is obtained by mounting the looms with two warp-beams, upon one of which the warp which is to produce the figured bars or stripes is drawn tight, while the remaining warp on the other beam is allowed to hang loose, the batten forming the plaits in pushing home the weft.

Several attempts have also been made to produce the different kinds of plush for the market, but the fact that the necessary tackle for its manufacture on hand-loom is very expensive would seem to be a serious impediment. At the weaving school in this place, which is attended by over 200 pupils, much attention is being paid to the manufacture of this article, but as yet no very favorable results have been attained. The subjoined sample will give a very fair idea of the plush industry in its incipient stage. It is sufficient, however, to show that an outlet is gradually being found for the surplus of labor which is running to waste here, and which is reducing skilled and schooled labor to starvation.

Regarding the interrogatories contained in the Department's circular, the only manufacturers who answered them were Messrs. Kratz & Busk, who answer as follows:

Question. What is the area of land, in square feet, and its present cost value, and what is the value of the buildings upon it now occupied by you for manufacturing purposes?—Answer. 4,525 square meters, at 35.075 cents per square meter, \$1,616.19; value of factory buildings, \$52,714.19.

Q. What is the area, in square feet, of floor surfaces in actual use, and cost of same, per square foot, based upon cost of building?—A. 2,552 square meters floor surface. The square meter of floor surface, with building, costs \$21,022.04.

Q. What kinds of machinery are in use? Name varieties, and state if all are self-acting or otherwise.—A. Two steam-boilers, used alternately; 1 steam-engine, 213 power-looms in use, 6 machines for spooling and reeling warp, 4 machines for spooling weft, 5 twisting-machines, 1 sizing machine, 12 machines for beaming warps, of which 8 to 10 are in constant use. All these machines are driven by steam. Besides these there are 12 machines for shearing the warp, worked by hand. Besides these there are 12 hand shearing-machines.

Q. What number of harnesses are used with your looms?—A. On an average, two harnesses for each loom. One 65 to 70 centimeters and one 110 to 120 centimeters in width.

Q. What is the present cost price or value of all the machinery in your factory, including engines, shafting, tools, &c.?—A. The present value of machinery, &c., amounts to \$55,952.40.

Q. What kind of power is used to run your mill, and what is its horse-power machinery?—A. The engine has a capacity of 45 horse-power; on an average we use 35 horse-power.

Q. What is the price of coal per 1,000 kilograms, delivered at your factory?—A. \$2.20.

Q. What amount is annually paid for taxes upon land, buildings, machinery, and power used by you for manufacturing purposes?—A. \$50.

Q. Are there any other expenses entering into the cost of production, such as insurance, depreciation of plant, interest, &c.? If so, please state the items and amount.—A. Insurance against boiler explosions, \$85.71; fire, \$152.40; sick fund, \$333.33; insurance against accidents, \$357.14; total, \$928.58.

Q. What return on capital invested do you regard as satisfactory?—A. Five per cent.

Q. What is the total amount in meters (kind and marked value at mill per meter) of goods produced at a stated period, say one week?—A. Eighteen to twenty thousand meters weekly, at a cost ranging from 19 cents to \$1.19 per meter.

Q. What advantage has a power-loom over a hand-loom other than that of producing a large quantity of goods in a given time?—A. The advantages of a power-loom are: (a) Plain, raw, and mixed yarns can be sheared without waste from cobs. (b) That a longer warp (up to 600 meters) can be beamed. (c) That the spooling and reeling of warp and weft, as well as the preliminary work for preparing the warp, shearing, sizing, twisting, beaming, &c., can be accomplished quicker and cheaper on steam-machines. (d) That the goods in consequence of the evenness of the warp and weft turn out better in quality and more even color. (e) That the wages for a piece of goods scarcely amounts to the half of those paid for work done on the hand-loom.

Q. Can all the articles which are made on a hand-loom be made on a power-loom, and what is the difference in the cost price?—A. Although great progress has been made in the last ten years in the building and perfecting power-loom, and although hand-work is gradually being supplanted by machinery, there are articles which can only be made by expert master-weavers in the hand-loom. The difference in the cost price between goods made by hand-loom and power-loom ranges from $2\frac{1}{2}$ cents to $11\frac{1}{2}$ cents per meter in favor of power-loom.

Q. How many meters of cloth can be made on an average per day on a hand-loom and on a power-loom?—A. About eight meters on a hand-loom and twenty-four on the power-loom.

Q. What is the total number of persons employed in and about your factory exclusive of administration?—A. Two hundred and thirty persons in the factory, and eighty outside.

Q. What number of hours per week are your hands required to work, and what is the total average amount of weekly wages paid them?—A. Sixty-five hours' work per week; total amount of wages, \$33.33.

Q. What is the average price of power-loom in your factory?—A. The average price of power-loom is about \$107.14.

Q. What is the average price of yarns per pound, delivered at the factory, and following it to the finished goods, what is the percentage of shrinkage or waste?—A. The average price of a pound of yarn is 69 cents* on yarns which are delivered from the spinning mills on cobs. There is no loss by waste or shrinkage, rather a small profit. On other yarns we estimate a loss of about 2 to 3 per cent.

Q. What is the average length of credit you give to purchasers of your goods?—A. Three to six months.

Q. What is the prevailing rate of interest paid by entirely responsible houses in Saxony for the use of money?—A. Four to five per cent.

AGRICULTURE.

There are in the Kingdom of Saxony about 5,789 square miles of territory, holding a population of 3,000,000 souls. The acreage of the entire Kingdom is computed at 3,604,960, comprised of the most part in large estates of 2,000 acres and upwards, with several ducal demesnes of more than 80,000 acres, and smaller farms ranging from 10 to 100 acres.

In each parish there is a so-called "Rittergut," or domain. The feudal rights enjoyed by these domains until a comparatively recent date have all been abolished, so that to-day a "Rittergut" is nothing more than a large farm dignified with an aristocratic name.

The country for the most part is undulating and hilly, and rises into mountains on the Bohemian frontier. The soil is loamy, stoneless, with a humus of about one yard, on an average, in depth. The land consequently is very fertile, and, according to its area, there is more under cultivation than in any other province in the Empire. What is called "intensive" cultivation is the rule everywhere, and it is safe to say that not one foot of land is allowed to be idle. In many places the public highways are even made to contribute their share towards the support of the community. In some places they are planted with cherry-trees; in others with plum and even with apple trees, as may be found most

* Since the above price of yarn was quoted, yarn has declined to 40 cents per pound.

suitable. The proceeds from the sale of the fruit go to defraying the communal expenses, the amount being generally deducted from the communal taxes.

In traveling through the country one is struck with the large number of ponds of all sizes which stud the fields in every direction. Whether these ponds are the result of accident or design, they are as carefully tended as are the fields themselves. They, too, are a source of income to their owners. They teem with carp, tench, and other fish that will thrive in sluggish water, which are taken out in the fall and sold at prices ranging from 12 to 20 cents per pound. The ponds are then restocked with a young brood, which costs from 50 cents to \$1.25 per hundred, according to size. These fish are left to shift for themselves until they are a year old, when they are generally large enough for the market. In winter the ponds yield a crop of ice, which is readily disposed of at a fair price. Where their services are not required to turn a mill, they at least serve as watering places for the cattle, and where they are situated near a village or hamlet they even feed the hand-engine in case of fire. Where these ponds are made the land taken for the purpose generally is unsuited for other purposes.

The quantities of fruit brought to market are astonishing, in the low lands the prices ranging from 30 cents to 70 cents for a bushel of apples, such as the Golden Rennet, &c., and the finest pears are sold at \$1 per bushel.

In spite, however, of the great fertility of the soil, the cheapness of all kinds of agricultural produce, and the great industry of the peasantry, farming in Saxony is a very precarious occupation, so much so that the legislature of the Empire has been called upon to adopt measures looking to the amelioration of the agricultural industry, and has responded to the call very promptly, although it is feared with little effect, the competition from other countries being so great as to render the farmer's prospects almost hopeless.

It is indeed a sad commentary upon the condition of agriculture in so fertile a country when cereals are sold in the market at an advance of from 10 to 15 cents per bushel above the price of production.

In the case of oats the price quoted in market is exactly what they cost to produce, as will be seen in the subjoined statements furnished me by farmers, or such as engage in farming for pleasure.

About two-fifths of all the farm hands in Saxony are women, two-fifths men, one-sixth of the whole number being minors of both sexes, ranging from twelve to eighteen years, who only receive their board for their labor, or in the case of day laborers not even that, being taken afield by their parents to aid them in their work. The heavier work, such as plowing and mowing, is done by men, but thrashing, binding, sheaving, hoeing, &c., is done by women, or, at best, decrepit old men.

AGRICULTURAL IMPLEMENTS.

In the immediate vicinity of cities and large towns modern implements are frequently met with, but in districts more remote they have not advanced beyond an occasional iron plow, and, at the most, an iron clod-breaker. Generally speaking, however, the implements most in use are still of that nondescript character which makes farming in Germany so interesting to look at from a distance.

The plow is the most ungainly-looking concern imaginable. It is composed of a rude colter, a beam almost straight as a bowsprit, awkward handles, and the inevitable flange-board, the whole being mounted on a pair of wheels of unequal size, the larger of which runs in the furrow.

The hoe plays a very important part in agriculture here. It consists in an oblong plate of iron 6 to 8 inches long, with an eye at the top, into which is inserted a handle of beech wood about 3 feet long. This hoe is used for loosening the earth, weeding, planting, digging potatoes, making furrows, and a variety of other purposes, and seems to be the inseparable companion of peasant women.

The scythe has certainly been the least improved upon of all agricultural implements. Its nearly straight iron blade, measuring from 20 to 24 inches in length and about 3 to 4 inches in width, tapers to a blunt point, and weighs about $2\frac{1}{2}$ pounds without the handle, which, being about 4 feet long and very thick, makes the scythe quite as heavy as it is ungainly.

Machinery of any kind is only employed on large estates, but in this district the hilliness of the country precludes the use of the steam plow or the reaper or mower. Steam thrashing machines, however, are sometimes met with. One enterprising individual in a neighboring village, having procured himself a steam thrasher, now goes about the country thrashing grain at the rate of \$1.42 per day.

As far as I could ascertain, a combination does not exist among the farmers anywhere in this neighborhood for maintaining steam-engines for agricultural purposes. There are instances, in fact, where machinery has fallen into disuse, owing to the peasants' prejudice against and ignorance how to use it, and I can only repeat that the great supply of cheap labor, together with the conservative character of the Germans, offer serious obstacles to the general introduction of modern machinery of any kind.

The few machines in use are of foreign origin, "improved" by home industries of course, the German's remarkable talent for imitating and improving all kinds of foreign productions militating in no small degree against the introduction of foreign machinery to any extent.

Owing to the conflicting answers I received to my inquiries regarding rentage, subsistence, and the price of labor in the rural districts, I deemed it best to give *in extenso* the replies of the three persons whom I consulted, and whom I consider the most competent to speak in the matter.

I would, however, state that where there is a difference in the figures quoted as the price of a given article, it ought to be borne in mind that here, as with the manufacturers of dress goods, the conditions under which such articles are produced greatly influence the price of their production.

One of my informants, for instance, leases lands belonging to the ducal domains, which lie in the immediate neighborhood of Glauchau; the rentage, owing to the vicinity of the land to the town, is higher, and the price of labor dearer because it is hired by the day without board, &c.

The second party leases the half of a ducal demesne situated about 4 miles from this town, and in consideration of certain services to be rendered the estate, as occasion may require, is allowed a reduction of rent.

The third party owns a small patch of ground in a parish of which he is the chief magistrate, not far from Chemnitz, and as his answers to all my inquiries are so intelligent and satisfactory, I would call particular attention to them as giving a truer picture than could any words of mine of the almost hopeless condition of the "small farmer" so much spoken of and quarreled over in the newspapers and legislative halls of the Empire.

In the Kingdom of Saxony the tenure of land is allodial. The rentage averages in the lowlands about \$17 per acre, in the foot-hills about \$12.50, and in the mountainous districts \$8.

For purposes of taxation real estate is divided into "units," each unit representing about 71 cents presumed net profit or income.

This system of appraising real estate is looked upon with much favor by all classes in the Kingdom as the only system calculated to divide the burden of taxation in the most rational manner; in the case of land, for instance, such as is manifestly less productive being divided into fewer units than more productive land. So of two adjoining fields, one may be more productive by reason of the nature of its soil and its position than the other. Their relative productiveness being first ascertained, they are divided into units. Presuming, then, that the income or assumed net profits of a field to be, say, 300 marks, or \$71.40, there would be 100 units at 3 marks, or 71 cents each, subject to taxation.

Forests and woodlands are exempted from taxation as giving no fixed income or profit.

Local taxation depends largely upon the condition of the parish and the stretches of highway it has to maintain, and it is here perhaps where the great advantage of making a public road contribute towards its maintenance by planting fruit-bearing trees upon it for the benefit of the parish or community which is taxed for its care would be most apparent.

As a rule, small farms of about 12 acres pay about \$4.75 taxes, and farms of 50 acres about \$28.50, including insurance, which is obligatory.

About 42½ cents is the amount of taxes levied on one acre of land, including insurance on crops, buildings, and fixtures.

Day laborers pay about 95 cents annually, exclusive of school rates, which amount to from 3½ cents to 10½ cents per week, according to the age of the child.

In assessing the amount of taxation on farm lands, a clear profit of \$7.13½ to the acre is assumed from good lands, which decreases in proportion as the lands become less productive.

WAGES.

The customary wages paid to hired servants on farms are about \$57.19 per year with board and lodging for male servants, and \$28.50 for females. Day laborers—that is, field hands—are paid by the hour at the rate of 5½ cents per hour for a day's work of twelve hours, or about 63 cents per day without board. Women receive 2½ cents per hour, or 31½ cents per day.

On a farm of about 175 acres there are employed 1 head servant, 1 under servant, 1 stableman, and 1 house maid. Where the farmer assists in the work himself, he needs only one servant. This farm is worked by 2 horses, and maintains 10 cows, 8 to 10 pigs, and perhaps 10 sheep, although the latter are seldom kept on small farms or estates. During the harvesting or haying season, 1 to 2 day laborers and 2 to 3 women are employed extra.

With two horses a man will plow about one and a quarter acres per day of twelve hours work. Cows are only employed for tilling the soil on very small plots of 5 to 6 acres and in mountainous districts.

The meals of farm hands generally consist of a soup made of milk, bread, meal or potatoes, or curd and potatoes, with coffee and dry bread for their first breakfast at 5 a. m. At 9 a. m. they receive bread and

butter, with a glass of liquor or a light beer, but this is altogether optional with the farmer.

Sugar or sirup is never allowed, and but very little milk. As for tea, it is never used. The coffee is composed of one-third coffee and two-thirds chicory, both of the very cheapest quality, and made very weak at that.

For dinner they have meat and vegetables three times a week and always on Sundays. On those days when no meat is served they have vegetables or pulse, generally boiled in water and mixed with fat, and potatoes boiled or stewed and sometimes made into dumplings, which latter is a very favorite dish with all classes.

For their afternoon meal they have coffee and bread and butter or fat, and for their supper soup or curds and potatoes. The cost for maintaining a hired man or maid on a farm is computed at from 21 to 23 cents per day. There is a clause in the local regulations governing hired servants which fixes the minimum cost of maintenance at \$65 per annum per head, but this regulation is never appealed to.

The dwelling-houses in the rural districts are for the most part substantial one or two story brick houses, with slate or tile roofs, and generally inhabited by one, two, or even four families, as the case may be, each family occupying one, two, or more rooms, according to their needs and means; the rent being from \$10 to \$20, according to the number of rooms occupied. There are also low one-story houses with gardens attached, costing from \$23 to \$35, and inhabited by single families. In these tenement houses, as, in fact, in all the houses inhabited by the poorer classes throughout the Kingdom, except in large cities, a kitchen is unknown, the rooms being provided with large iron stoves which serve the double purpose of warming the rooms and cooking the meals.

The expense of tilling one hectare (2.471 acres) of land, that is, for plowing, manuring, &c., would be about \$14.27 exclusive of the seed. The seed required for this hectare and the market price would be as follows:

[1 scheffel = 1.41844 bushels.]

Kind of seed.	Cost of seed per scheffel to farmer.	Quantity required.	Price obtainable.
		<i>Pounds.</i>	
Rye	\$2 65½	485	\$2 73
Wheat	2 61	400	2 97
Oats	1 60	500	1 60
Barley	1 78	525	1 90
Potatoes	90	2,500	1 05

According to the above calculations, I should say that the cost of production of 2,000 pounds of any of the articles mentioned would be on an average about \$37, providing the harvest is a middling good one. It is estimated that a fair harvest will give a return amounting to eight-fold the quantity planted or sowed.

Mr. Herrman, postmaster at this place, who gave me the above information, has been frequently called upon to supply the Saxon Government with statistics upon the condition of agriculture in this district. As the figures he gives me refer in part to agriculture generally in Saxony, and in part to his own experience in the matter, I should think his statements would be worthy of a careful perusal.

Mr. Huth, the tenant on the manor at Remse, a small village about 4 miles from Chemnitz, gave me the following information :

The estate contains 1,094 acres, of which I rent 547 acres. I pay in cash \$16.60 per hectare (2.471 acres), but render certain services to the estate, such as keeping the roads which traverse the parish near the estate in repair, laying and keeping in order the water-pipes which supply the castle, the brewery, distillery, and brick-yard on the estate with water, hauling wood, sand, and building material in case of need, &c. For these services I am allowed a reduction of about \$3.62 per hectare (2.471 acres); otherwise my rentage would be \$19.97½ per hectare, which sum represents the real amount of rentage for the estate.

My expenses for insurance, which covers cattle, farming utensils, and crops, &c., amount to \$95.95 annually. My insurance against hail, \$147.50 more. The insurance upon buildings and houses of all kinds is borne by the owner of the estate.

HELPS.

I employ eight male farm hands, one head servant at \$59.50 per annum, and seven under-servants at \$47.50 apiece, with board and lodging; also, five maid-servants at \$40 apiece. The cost for keeping a servant is set down at from \$59.50 to \$71.40 apiece annually.

In the busy season, I engage eight day laborers at 47 cents per day, and twelve females at 23½ cents, without board or lodging.

I also keep an overseer, whom I pay \$95, with board and lodging.

I give my people milk soup for their first breakfast, at 4.30 a. m.; at 9 they have coffee, with an occasional piece of cheese. I give them an allowance of fourteen pounds of bread and one-quarter pound of butter each per week. They receive neither sugar nor sirup, and but very little milk.

For dinner I give them, as is customary, meat three times a week and invariably Sundays. In the harvest and haying season I give them meat every day; with the meat they have one kind of vegetable boiled in water and mixed with fat. When they have no meat, I give them either a soup with vegetables, or pulse, or dumplings and potatoes.

I generally kill 8 pigs, 4 sheep, 4 calves, and 1 ox annually for them. The beef costs me 11½ cents per pound; pork, 13 cents; mutton, 11½ cents, and veal 8½ cents. All in all, my servants cost me from 19 to 21 cents per day apiece for maintenance.

For working the farm I keep 14 horses and 3 yoke of oxen. I consider the work done by three yoke of oxen to be equal in amount to that done by 4 horses, besides costing less to keep. When they are no more fit to work I fatten and sell them at a fair price.

The expenses for keeping a span of horses, including medical attendance, &c., amount to about \$154.75 per year, whereas a yoke of oxen will cost about \$119.50.

With a pair of horses a man will plow about 1½ acres of land a day, and with a yoke of oxen about one acre.

I keep sixty cows, from which I gain about 136,170 quarts of milk annually, which I sell at 3½ cents per quart, with the cream, and skimmed milk at 2½ cents. I make butter only of such milk which I cannot dispose of, as the sale of milk is more profitable. One cow will cost me about \$57 to keep annually.

For tilling one hectare (2.471 acres English), including manure, labor, rent, taxes, and insurance, but exclusive of the seed, I always calculate about \$20.30. The seed would cost as follows:

Kind of seed.	Quantity.	Cost.
	<i>Pounds.</i>	
Rye.....	400	\$7 50
Wheat.....	485	7 30
Oats.....	463	6 80
Barley.....	529	7 05
Potatoes.....	3, 858	7 74

Making a total of \$27 to \$32.80 per hectare, or 2.471 acres English.

Taken all in all, I should say that the production of 2,000 pounds of rye, oats, or barley would cost \$35.70, and the same quantity of wheat \$38.

Mr. Habenhorn, a magistrate in the village of Reinholdshain, near Chemnitz, kindly furnished me with the following:

I till 5½ acres (English) of my own land, and two-thirds of an acre, which I rent for \$13.

On this land I cultivate the following :

Articles.	Value.	Quantity cultivated.
Rye.....per bushel..	\$2 65	<i>Bushels.</i> 20 to 28
Oats.....do ..	1 60	28 to 36
Potatoes.....do ..	90	113 to 141
Beets.....per cwt..	35½	<i>Oct.</i> 56 to 85
Clover.....do ..	22	14 to 28
Green fodder.....do ..	22	85 to 191
Hay.....do ..	\$14 00 to 21 00	42 to 56
Aftermath.....do ..	4 70 to 9 40	14 to 21
Fruit.....do ..	1 90 to 7 19	

Annual expenses.

Fire insurance	\$1 65
Ground tax	1 83
Income tax	3 30
Annuity	2 00
School rates, five children	6 10
Insurance on furniture	1 83
Communal fund	6 13
	22 84
Clothing	95 73
Shoemaker	29 82
Miscellaneous	11 85
Mission fund	7 16
	144 56

Subsistence for family of 11 persons per day.

	<i>Cents.</i>
Breakfast, coffee	11.03
Second breakfast, bread and butter	11.09
Dinner (vegetables, pulse, and occasionally meat)	29.08
Afternoon meal, bread and coffee	11.09
Supper, soup or curds and bread	19.00
	81.29

Total expenses for year.

Insurance	\$22 84
Clothing	144 56
Subsistence annually	230 29
Rent of one-half acre	13 00
	410 69

I would say here, however, that I have an income of \$142.85 annually as magistrate and "standesbeamter" (an official before whom civil marriages are contracted), and that this, together with the proceeds from my land, scarcely suffice to maintain me and my family.

I think that the tilling of 1 acre (1.36756 acres English) of land would cost: Rent, insurance, &c., \$19 to \$23.80; labor, \$2.08 to \$3.80; seed rye, \$4 to \$4.28; manure, \$7.14 to \$8.33; total, \$32.22 to \$40.15.

The returns would be 17 to 28 bushels rye, at \$26.60, \$60; 36 to 44 hundredweight straw at \$17.12, \$21.90; total, \$81.90.

For planting potatoes the expense would be about: Labor, \$3.80 to \$4.75; seed, \$2.80 to \$3.80; manure, \$5.33 to \$9; rent, \$19 to \$23.80; total, \$32.93 to \$41.35; with a return of 120 to 160 hundredweights, at 59 cents per hundred weight, which would give me \$70.80 to \$94.40, assuming of course the harvest to be a good one. A poor harvest would reduce these figures about 40 per cent.

As I have never cultivated wheat or barley, I cannot say what the price of their production would be, but the cost price of 2,000 pounds of rye, oats, or potatoes would be, for rye, \$25 to \$30; oats, \$21.30 to \$23.80; potatoes, \$9.40 to \$11.40.

In conclusion I would say that we small farmers are laboring under great disadvantages. A surplus never remains, or at least very seldom, however much this

were to be desired as an aid in learning and educating our children and a refuge in old age.

From the foregoing statements it would seem that the cost of production in two adjoining farms would vary considerably. This is due to the fact that the land is rated according to its productiveness and proximity to large towns or cities, but on the whole land in the neighborhood of Chemnitz is exceedingly high.

HOUSE INDUSTRIES.

Before closing this report there is one matter of special importance that I hope, by calling attention to, to see initiated in the United States, and this is the home-made industries by which every home is made a contributor in one way or another to the comforts of those above or beneath them.

These industries cover a very wide range, so much so as to preclude their being sketched with any degree of precision or minuteness—all varieties of admirable and patiently-wrought productions, from the simplest articles of clothing to luxuries in the way of adornment. At almost every farm house, in all villages wherever one goes, the eye is gladdened by evidences of thrift in every conceivable branch of industry, which have been the means of raising many a poor cottager from a pitiable state of enforced poverty to comfortable circumstances.

Walking through a village here one sees a little girl on her way to school patiently knitting a silk stocking, an article that she may never aspire to wear herself, and to know that that stocking will be included in an invoice which comes to this consulate to be verified for entrance into the United States. By being carefully taught at home when young these children can card and spin as soon as they are able to walk. They are also taught the constitution of the different dyes used and how to use them; so we see them turn out excellent material in all kinds of stuffs to be sent to the United States.

If this patronage is to be regarded from a charitable point of view then nothing can be said against it more than that we have our own poor among us that should be encouraged in helping themselves by teaching them these industries. Indeed, these poor people that are engaged in the industries of which I am now speaking have been encouraged and taught it by benevolent ladies who have taken this means of showing them how to make themselves useful to the human family and to themselves instead of encouraging them in idleness by charitable contributions.

GEO. C. TANNER, *Consul*.

UNITED STATES CONSULATE,
Chemnitz, December 15, 1886.

THURINGIA.

REPORT BY CONSUL BISCHOFF ON TEXTILE INDUSTRIES.

DIFFICULTY OF OBTAINING ACCURATE AND SATISFACTORY INFORMATION.

The Germans are as a nation naturally quiet and unobtrusive, each man leaving his neighbors to their own pursuits, and at the same time expecting for himself this same freedom from molestation and scrutiny. As a consequence of this, any unusual inquisitiveness, especially on the part of a stranger, is apt to raise suspicion and to induce a corresponding cautiousness as to disclosures. This feeling extends also

into the German's commercial relations, and is their strength—not only in home competition but also in his struggles with foreign competitors, and this guardedness of disclosure is pre-eminently strong as to the goods in the manufacture of which Germans excel, or in which they control the markets. Concerning such wares it is almost impossible to get any information either from manufacturer or exporter. Hence it happens that in seeking for specific and satisfactory information as to textile fabrics in the manufacture of which the Germans have for many years taken a front rank one is met by almost insurmountable difficulties.

In addition to this it must be remembered that inquiries from American consuls are looked upon with the greatest suspicion, since Germany exports great quantities of textiles to the United States, and German manufacturers fear that if their methods are known in America the trade thereby will be destroyed.

I sent out to many leading manufacturers letters asking for information. The responses received from such have been invariably courteous in tone, but quite various in character.

Some politely declined to give any information at all; others gave only evasive answers, while the majority offered to permit inspection of their establishments, but without the promise of answering such questions as were propounded in my letter of inquiry.

GERMAN TRADE PRESS ON THE SUBJECT.

To show the extent and strength of this feeling of secrecy, I take the liberty of giving the following quotations, taken from an editorial, entitled "American Espionage in Germany," which appeared in Kuhlows German Trade Review and Exporter, September 9, last:

"We are glad to see that German trade papers are up in arms against the novel but unreasonable system of espionage which the United States consular authorities are endeavoring to employ in this country. For some time our manufacturers in various industries have been served with circulars, in which they are asked the entire ins and outs of their private business affairs, which information is sought in order that when sent across the Atlantic it may be used against them.

"It passes belief, that such methods as this should be resorted to. If the American authorities expect to be made acquainted with the private affairs of German business men, they are indulging in an impossible wish."

Such articles as this not only show the spirit which prevails, but also serve to confirm that spirit.

ACKNOWLEDGMENT.

An honorable and liberal-minded exception to the above I have found in Mr. Bernhard Siegel, of Pressneck, Thuringia, a description and plans of whose flannel factory I herewith submit, the same having been obtained by personal investigation and inquiry.

This establishment, although not conducted on what would in America be considered a very extensive scale, is, however, here looked upon, as to size and capacity, as a fair representative of German manufactories.

In construction and management it is a model, presenting a handsome appearance, being kept in excellent condition, and conducted with thorough system and upon strict business principles.

Description of flannel factory of Mr. Bernhard Siegel, in Pressneck, Thuringia.

I.—BUILDINGS.

The factory consists of a solid five-story structure, built partly of stone, partly of brick, and bearing a slate roof. The whole structure is divided into one main and one wing building.

The main building, running east and west and northwest, is 232 feet long, the wing joining the main building at its eastern end and running at right angles to it, is 83 feet long. To the latter are also attached shed buildings.

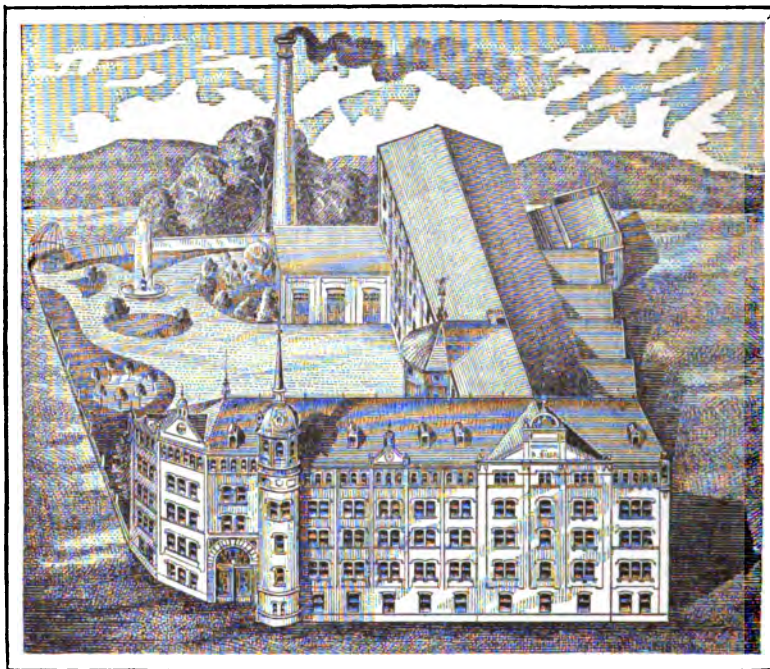
The main and wing buildings are lighted by side windows, the shed buildings by sky-lights.

The windows on either side of each building are placed directly op-

posite each other, and can be so manipulated as to furnish at all times proper ventilation. The lighting at night is effected by 200 solar oil-lamps, bearing 14''' round burners.

The light thus furnished is perfectly sufficient, and at the same time cheap, as will be seen below.

At the western end of the main building, being a corner formed by



the intersection of two streets, a tower has been erected, which is not only in itself an ornament, but also serves, from an architectural standpoint, to give symmetry to the whole. This tower is covered with copper.

The accompanying illustrations present not only the above described buildings and tower, but also the beautifully ornamented grounds belonging to and adjoining the establishment.

USES OF BUILDINGS ACCORDING TO SUBDIVISIONS IN ACCOMPANYING GROUND PLAN.

Building H.—Ground floor, scouring and cleaning of wool; second floor, counting-rooms; third, fourth, and fifth floors, storage of finished goods.

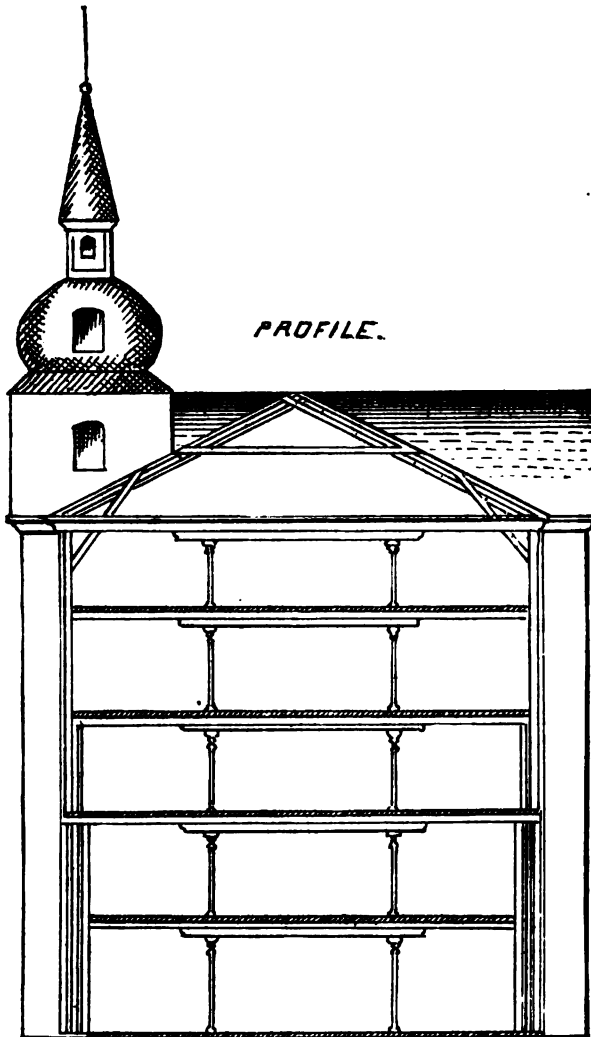
Building F.—Ground floor, carding room; second and third floors, spinning rooms; fourth floor, mechanical weaving; fifth floor, finishing room.

Building K.—Ground floor, engine room, teasing, carding, and sorting; second, third, fourth, and fifth floors, the same respectively as in building F.

Building E.—Ground floor, fulling room; second, third, fourth, and fifth floors, raw material and storage for yarns.

Shed building A.—Fullery and wool scouring.

Shed building D.—Boiler house, two steam boilers.



AREA OF FLOOR SURFACES.

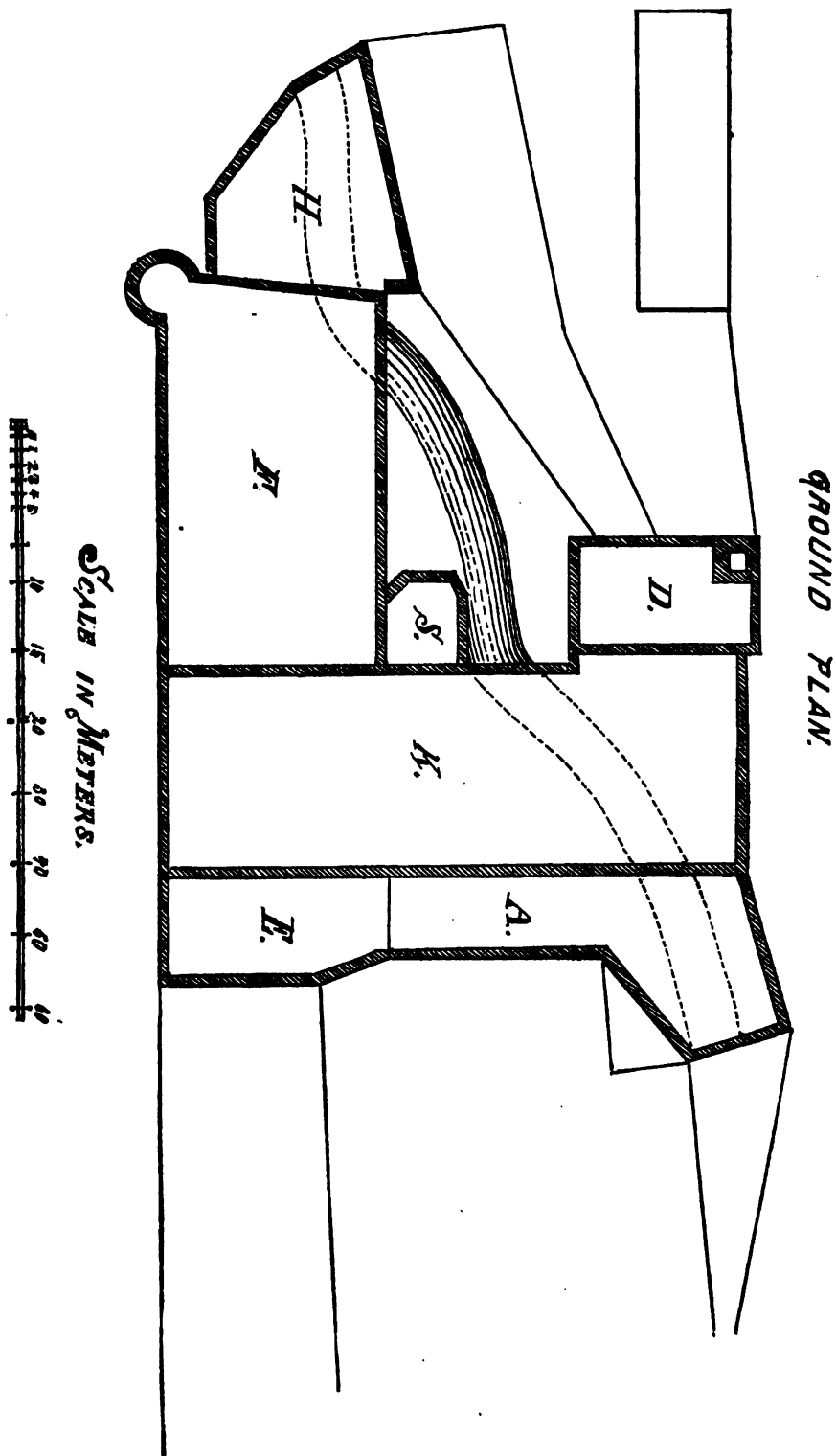
The area of floor surfaces in actual use, expressed in square feet, is as follows:

	Square feet.
Building H	10,200
Building K	32,000
Building A	8,830
Building S	1,715
Building F	26,675
Building E	15,920
Building D	1,960

Total..... 97,300

Cost of same per square foot, based on cost of building, 61½ cents.

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STREAM.

It will be observed (see ground plan) that a stream of water passes through the grounds and under buildings H, K, and A. This stream keeps in motion a turbine-wheel of 20 horse-power, supplies water for the steam boilers, and furnishes the water needed for the cleaning and scouring of wool, to which purposes the ground floors of the buildings just mentioned are devoted.

It also serves to carry off refuse, old dye-stuffs, &c., preventing thus disagreeable and unhealthy odors.

II.—MACHINERY.

MOTIVE POWER.

The machinery is run by a steam-engine of 80 horse-power and a turbine water-wheel of 20 horse-power; total, 100 horse-power.

The boilers to the engine have a heating capacity of 220 square meters, and are capable of bearing six atmospheric (90 pounds to the square inch) pressures.

FOR WASHING AND PREPARATION OF WOOL.

One Leviathan wool-washing machine constructed by the proprietor, one centrifugal machine for squeezing water from wool; drying done on separate floors.

FOR CARDING AND SPINNING.

Twelve machines forming four assortments, four machines forming two assortments, nine self-actors, two cylinder fine spinning machines, 4,500 spindles in all.

Fourteen of the carding machines are 4 feet 2 inches wide, and two 3 feet 8 inches. The proprietor further says:

I have introduced into my factory the new Bollett single belt system, and am glad to say I find it entirely satisfactory. Klein, Hundt & Co.'s system, although extensively advertised, does not as yet seem to meet with a favorable consideration.

FOR WEAVING.

There are 46 looms in action, distributed as follows:

System.	No. of looms.	Width.
		<i>Feet. Ins.</i>
Schönherr.....	6	*17 11
Crompton (with change).....	1	17 11
Revolver (with change).....	4	5 8
Schönherr (with change).....	1	6 7
Kudjout (without change).....	34	{ 7 2 8 5 9 0

*Including extension.

There are two harnesses (equipments) used with each loom; one for plain weaving and one for twilled work. The width of these harnesses varies from 51 inches to 137 inches.

FOR FULLING AND TEASING.

One hammer fulling-machine (*Lochwalke*) with 5 pair hammers, 1 improved patent hammer-machine (*Kurbelwalke*), system Gessner, (factory in Aue Saxony); 1 cylinder fulling-machine, system Hemma (factory in Aachen, Prussia), 2 scouring machines constructed by proprietor, 3 double teasing machines, 2 simple teasing machines with revolving cards.

FOR DYEING.

Ordinary dyeing apparatus, operated in separate building in the vicinity of the factory.

The average cost of spindles is \$2.38. A complete set of carding machines delivered at the factory, including \$119 for freight and packing, will cost \$2,618. The average cost of looms is \$142.80.

III.—COST OF RUNNING FACTORY.

MATERIAL.

For the most part German pulled wool of medium length is used in this factory. The quality of the wool is of a common medium grade. It is purchased from pullers and sheep-skin tanners, and is scoured in the factory. The average cost of such wool after scouring at the factory is $33\frac{1}{4}$ cents per German pound, or $\frac{1}{2}$ kilogram = 1.10 English pound.

Taking the material in its raw condition as purchased, we calculate upon a loss of 25 per cent. from shrinkage before the same is turned out as finished goods.

No import duties are paid on raw wool, it being admitted free.

MOTIVE POWER.

For the heating of the boilers, 800,000 kilograms, or 800 tons, of the best Zwickau coal are used annually. This coal delivered at the factory costs \$3.85 per ton. Total, \$3,080.

Other expenses connected with the engine are: Salary of machinist per year, \$247.52; help, removing ashes and cleaning boilers, \$59.50; greasing, oil, tallow, &c., \$71.40; tightening, rubber, asbestos, \$47.60; repairing, \$71.40; burnishing, \$11.90; total, \$509.32.

Annual cost of turbine wheel, for repairing, watching, cleaning bed of stream, &c., \$17. Total cost of motive power, including coal, \$3,606.32.

EMPLOYÉES AND WAGES.

The total number of persons employed in and about the factory, exclusive of administration, is 135. The total amount of wages paid per week is \$390.37; and the number of hours of work per week required is 72.

The following table shows the weekly rate of wages paid to each man and woman employed:

Average weekly wages and number of employés.

Department of labor.	Men.	Women.	Average wages per week of 72 hours.		Total per week.	
			Men.	Women.	Men.	Women.
Wool-sorters		8	\$1 90		\$15 20	
Wool-carding:						
Overseer	1		7 14		7 14	
Second hand	2		3 33		6 66	
Common hands	6	4	1 90	\$1 67	11 40	\$6 68
Card grinders		7	2 14		14 98	
Spinning:						
Overseer	2		4 28		8 56	
Mule fixers	6	14	2 14	1 67	12 84	23 88
Spinners	2		3 21		6 42	
Common hands	1	1	1 67	1 67	1 67	1 67
Weaving:						
Overseer	1		5 95		5 95	
Section hands	3		3 93		11 79	
Weavers	30	20	3 57	2 74	107 10	54 80
Finishing:						
Overseer	2		3 93		7 86	
Second hand	3		3 21		9 63	
Scourers and fullers	5		3 81		19 05	
Shearers and pressers	5	3	3 57	3 57	17 85	10 71
Dyeing:						
Overseer	1		4 76		4 76	
Second hand	1		2 86		2 86	
Common hands	3		2 14		6 42	
Machinist	1		4 76		4 76	
Repair hands	2		3 33		6 66	
Watchman	1		3 57		3 57	

Total, 135; average per head, \$2.89½.

Mr. Siegel says that during the last two years wages have undergone no changes worthy of note, or to such an extent as to affect the cost of production.

INCIDENTALS.

The taxes on land and buildings are \$23.80 per annum; on machinery, \$130.90; total, \$154.70. Insurance on buildings, machinery, and stock, \$595. Depreciation of plant, \$5,950, being an allowance of 2 per cent. on the buildings and 5, 10, and 20 per cent. on the various portions of the machinery. To this amount is also added 4 per cent of the working capital (*Betriebs-Capital*), or \$1,428, making a total for depreciation of \$7,378. Lighting, 200 solar oil lamps, per month, \$28.56; per year, \$342.72. Total for incidentals, \$8,470.42.

IV.—GENERAL INVESTMENT.

LAND AND BUILDINGS.

The area of land belonging to the factory is 29,215 square feet; its present cost value \$9,520, or 32 3-5 cents per square foot; the value of the buildings is \$59,500; total, \$69,020.

MACHINERY.

The total value of the machinery, including boilers, engine, turbine wheel, shafting, &c., is \$52,360.

WORKING CAPITAL.

The average amount of capital (*Betriebs-Capital*) made use of annually in the management of the factory is \$35,700.

INTEREST.

Upon first-class securities 4 per cent. is the current rate of interest paid by German manufacturing firms. Some, however, are made to pay as much as $4\frac{1}{2}$ and 5 per cent.

RETURN SATISFACTORY.

The return on capital invested considered satisfactory by the proprietor is 10 per cent., and the usual terms of sale are remittance or draft within three or four months.

ANNUAL PRODUCTION.

The amount of flannel annually manufactured in this establishment is 860,000 meters, or 940,500 yards; and the average width of the same is 75 centimeters, or 29.53 inches.

SPECIFIC COST OF PRODUCTION.

This flannel weighs on an average 150 grams to the meter, or 4.865 ounces avoirdupois to the yard; and is manufactured at a cost of 23.8 cents per meter, or 21.76 cents per yard.

V.—SUMMARY.

Capital invested:	
Land	\$9,520 00
Buildings	59,500 00
Machinery	52,360 00
Working capital	35,700 00
Total	157,080 00
Persons employed:	
Men	78
Women	57
Total	135
Hours of work per week	72
Average wages:	
Per head	2 89 $\frac{1}{2}$
Per week	390 37
Per year	20,299 24
Annual production:	
Meters	860,000
Yards	940,500
Average width	inches 29.53
Average weight per meter	grams 150
Average weight per yard	ounces avoirdupois 4.865
Cost of production:	
Per meter	cents 23.8
Per yard	do 21.76
Return satisfactory	per cent 10

VI.—COST OF ONE YARD OF FLANNEL IN NEW YORK CITY, DUTY PAID.

It may be of interest to note what it will cost to lay down one yard of the above-described goods in New York City, duty paid.

The manufacturer tells me that the expense for transportation to New York, insurance, &c., amounts to about 10 per cent. on the cost value of the goods.

Reckoning upon 3.288 yards to the pound, we compute as follows :

	<i>Cents.</i>
Cost of production	21.076
Cost of transportation, &c	2.176
Duty on weight, at 10 cents per pound, and 35 per cent. of value	11.417
Total cost per yard in New York	35.353

This closes the description of Mr. Siegel's factory. The matter which follows is given because it bears upon the general subject in hand.

ARTICLES OF FOOD.

The following table shows the retail prices which prevail in this district at this time for the articles mentioned :

Articles.	Price.	Articles.	Price.
Apples:		Grains:	
Dried	\$0 16	Rye	per 100 pounds.. \$1 78
Green (inferior)	20	Wheat	do
Bread:		Lentils	per quart.. 04
Black (rye)	08	Meal:	
White, common	08	Oat	per pound.. 01
White, fancy	19	Potato	do
Butter	25	Rye	do
Beer	04	Meats:	
Brandy, 45 per cent. Tralles	12	Beef, steer	do
Beans	06	Beef, cow	do
Candles:		Beef, bull	do
Stearine	23	Mutton	do
Tallow	14	Pork	do
Cheese:		Veal	do
Home made	01½	Sausage, common	do
Swiss	28	Milk	per quart.. 04
Limberger	12	Oils:	
Coffee:		Petroleum	per pound.. 03
Java	45	Rape seed	do
Mocha	30	Salad, olive	do
Rob	28	Salad, poppy	do
Chicoory (substitute for coffee)	04	Peas	per quart.. 05
Coal	4 30	Potatoes	per peck.. 07
Coke	4 30	Rice	per pound.. 05
Eggs	15	Salt, fine and coarse	do
Fish:		Soda, washing	do
Carp	28	Starch	do
Eels	60	Soap	do
Trout	47	Sauerkraut	do
Herrings:		Sugar:	
Scotch salt	22	Brown	do
Dried	28	Loaf	do
Fowl:		Powdered	do
Gross	16	Vinegar	per quart.. 08
Pigeon	22	Vermicelli	per pound.. 12
Flour	04	Wood:	
Grains:		Hard	per cord.. 6 06
Barley	1 90	Soft	do
Oats	1 66		

Estimated expenses per week for food for support of a laborer's family, consisting of two adults and three children.

Articles.	Cents.	Articles.	Cents.
Bread	64.0	Taxes	7.0
Meats	47.5	Petroleum	5.0
Potatoes	17.0	Fuel	20.0
Milk	16.0	Beer and tobacco	15.0
Coffee	9.5	Sundries and medical attendance	7.0
Butter	31.0		
Vegetables	33.5	Total	\$3 93.0
Vinegar, salt, flour, spices, starch, oil, &c.	14.2		
Clothing and shoes	55.0	Total per year	204 36.0
House rent	51.3		

HAND-MADE TEXTILE FABRICS.

With regard to this subject I beg leave to say, that I wrote to the various ministers of state of the Thuringian States asking for statistics as to house industries, especially as to hand-loom weaving, in their respective districts.

The following statistics from Mr. Heim, minister of state of the Duchy of Saxe-Meiningen, are the only ones received in reply, the other ministers stating that they did not have the desired data at hand.

Number of persons employed in the textile industry in 1882, in the Duchy of Saxe-Meiningen, Thuringia.

Description.	Male.	Female.	Children.	Total.
Mechanical weaving (factories)	1,407	938	.....	2,345
Hand-weaving (house industry)	718	87	14	799
Total	2,125	1,005	14	3,144

In a previous report on this subject I find the number of hand-loom weavers in this Duchy in 1875 put down as 1,871. From the above we see that in 1882 they numbered only 785, the 14 children above mentioned being considered as help only, showing thus a rapid decrease. We judge from this comparison, that mechanical weaving is gradually and steadily supplanting the old method, and that it will require but a few more years to make this change complete.

In reply to questions propounded on this subject, Mr. Siegel says that in the vicinity of Pressneck hand-loom are to a very little extent used, there being only about twenty in Pressneck, a town of 7,655 inhabitants.

Mr. Siegel further says:

Hand-loom weavers, if employed by the manufacturers, are paid by the piece, and make in proportion the same daily wages as mechanical weavers; but to realize this they are compelled to work at least three to four hours more a day.

From a competent authority I have obtained the following:

COMPARATIVE ESTIMATE OF PRODUCTION OF MECHANICAL AND HAND LOOMS.

In cotton weaving, if the stuff is 0.9 meter in width, the shuttle moves 120 to 150 times in a minute; but, because of breakages in the thread, and the necessity of stopping often to change the spool, only an average of 90 woofs per minute is realized. Allowing now 2,800 threads to one

meter, the power-loom produces 23 meters of stuff in 12 actual work hours.

On the other hand, a practical hand weaver can make but 7 to 8 meters of the same goods during the same time.

In cotton prints made of numbers 16 to 30 yarn and 0.87 meter wide, 200 woofs per minute can be produced. Linen weaving necessitates a slower running of the loom, as linen threads break more easily than cotton.

In this case, if the warp is 0.8 to 0.87 meter wide, 90 to 95 woofs per minute can be counted on, but if the warp is 1.16 meters wide only 75 woofs per minute can be made.

In woollen weaving the same proportion between power and hand looms holds true in general, as is found in cotton weaving.

RECENT TRADE AND PRESENT OUTLOOK OF THE WOOLEN INDUSTRY.

From the reports from the various manufacturing districts I gather that the woollen trade in general during the past year, though tolerably active, was not at all remunerative. The continued decline in the prices of wool caused many manufacturers to lose money, for the price of finished goods did not fall in the same ratio as those of wool, but in a much greater ratio and more rapidly.

During the autumn, however, the manufacturers had some opportunity to improve their condition.

At present the wool market is depressed, and the outlook for the current year is considered by many manufacturers, especially exporters, as unfavorable.

One very potent cause of this depression is the fact that a bill has been recently introduced into the Reichstag proposing to lay import duties on wool. Not knowing what will be done with this bill, the manufacturers are naturally uneasy and cannot determine upon what basis to conduct their business.

Large meetings of the manufacturers have been held in various places to express protest against the bill, while numerous signed petitions from other districts have been forwarded to the Reichstag begging that the bill be rejected.

Among other things, we read in one of these petitions :

Such duties would deal a severe blow to the entire woollen industry of the country, as well as to the allied industries, since these industries consume nine times as much wool as Germany produces, and no duties whatever could have the result of the country supplying its own needs.

It is also incalculable how much misery would be caused if manufacturers working for export had to discharge the large amount of labor which they now employ, a step which would be imperative if such duties were introduced.

The woollen trade lies in general very low ; in few manufactures is full time being worked, and the prospects for the winter are very gloomy.

The exporters in particular, and especially those exporting to the United States, claim that the passage of such a bill would utterly ruin their business. Many say that it is just as much as they can now do to bear against the import taxes laid upon their goods by the countries to which they send them, and that this extra cost would render export entirely impossible ; while those exporting to our country claim that even a considerable reduction of our import duties is necessary in order to make it possible for them to compete to any great extent with our home manufacturers.

SAMPLES.

I send herewith a lot of samples in triplicate, tagged and marked according to the subjoined tabular description. These samples, which are of such generous proportions, were furnished by Mr. Siegel free of charge, although the purchase of the same was proposed.

Mr. Siegel during my whole intercourse with him as to his factory has been exceeding kind, and shown a hearty willingness to furnish all the information desired, a courtesy which is at this time all the more appreciated, because of the strenuous attempts now being made by the trade press, as has already been intimated in the introduction to this report, to prevent American consuls from obtaining information of manufacturers.

Owing to an unexpected delay, and the consequent uncertainty in the reception of these samples, the description of the same could only be brought in at this the close of the report.

The samples are sent directly to the Department of State.

Description of samples.

Quality.	Color.	Width.	Length.	Further description.
		<i>Centimeters.</i>	<i>Meters.</i>	
Molleton 1 (espagnolette)	Red	65	87	These goods are twilled, all wool, finished on both sides, and furnished in all colors and patterns; also in pieces of any desired length.
Molleton 1 (espagnolette)	Gray	70	87	
Molleton 2 (espagnolette)	White	65	87	
Molleton 2 (espagnolette)	Red	65	87	
Molleton 2 (espagnolette)	Bluish-gray	70	87	
Molleton 3 (espagnolette)	Yellow	65	87	
Molleton 3 (espagnolette)	Red	65	87	
Molleton 3 (espagnolette)	Gray	70	87	
Molleton 4 (espagnolette)	White	75	87	
Molleton 4 (espagnolette)	Bluish-gray	70	87	
Molleton 4 (espagnolette)	Red	65	87	
Molleton 5 (espagnolette)	Gray	75	87	
Molleton 5 (espagnolette)	Red	70	87	Same as Molleton; also finished on one side only if desired.
Molleton 6 (espagnolette)	Gray	75	87	
Coating 24 (Kernköper)	Red	70	87	Same as coating, but only plain colors; no fancy patterns.
Boy 33 (Mittelköper)	Dark blue	75	87	One side finished; fine apprêt.
Lama 41	Dark brown	110	22	Fancy patterns; fine finish.
Lama 42	Red figured	115	22	Fancy patterns; fine finish.
Lama 43	Dark figured	115	22	Fancy patterns; fine finish.
Lama 44	Dark figured	120	30	Fancy patterns; fine finish.

OSCAR BISCHOFF,
Consul.

UNITED STATES CONSULATE,
Sonneberg, January 28, 1886.

BREMEN.

REPORT BY CONSUL LOENING.

PRODUCTS OF AGRICULTURE.

In this consular district agriculture is not conducted on a very large scale, and cereals and vegetables are cultivated only for immediate local consumption.

The land is very poor. Nearly all the farms are small, and are cultivated by the owners themselves. These small farms produce but a

little more than is enough to keep the farmers, their horses and cattle, more money being made in cattle-raising and dairy products than in agriculture.

To be economical and satisfied with a little is the farmer's chief virtue. They all use modern agricultural tools of German make, patterned after the American. Wages paid daily farm laborers are from 1 mark to 1.5 marks for the men, and about 80 pfennigs for the women, and they must find themselves. Actual food, which consists mostly of coarse rye bread, potatoes and salt, and coffee, is estimated at from 50 to 60 pfennigs per head.

IRON WORKS.

I went to Osnabruck, and visited the Osnabruck Iron-Steel Works, a large concern, that, together with the workmen's quarters, form a little town, all inclosed, with chapel, school-house, &c.

Great pains are being taken by the management to make the laborer feel that he is not simply a number, worth so much, but a human being in whose welfare the employer takes a direct interest. They are made to feel that their conduct is known; that any undue extravagance is noticed, and efforts are made by the employers to co-operate with the laborers in helping them to live within their means.

Together and under the management of the directors they form a co-operative society, buying their goods and wares wholesale, but charging no profit and declaring no dividends, as is the custom in co-operative societies. Strikes are unknown.

Attached to a workman's house is a small yard or garden in which potatoes, turnips, and cabbage are cultivated by the wife and children; chickens and a pig are also kept, thereby using the refuse to advantage.

In some cases a laborer by his economy is enabled to buy and keep a cow, which often proves a source of revenue in an economical way.

The new law providing for the insurance by the employer of his workmen against accident is a great consolation to the laborer; he feels and knows that if he is so unfortunate as to be stricken down by illness or otherwise while at work, his family and self will not be put out immediately penniless.

The wages paid per week of 60 hours to ordinary laborers are from \$3 to \$3.50; skilled labor, \$5 to \$6.

SUBSISTENCE.

Rent of rooms (3), \$25 to \$35 per year; cost of food and taxes for, say, three persons (two adults and one child), is estimated at from \$3 to \$4 per week.

To calculate correctly what a laborer spends in living is impossible; he usually spends all he has, saving nothing. If he earns \$2 a week he will live off it, and if he earns \$10 a week he will live up to it, and in either case save nothing.

CIGAR-MAKING.

The manufacture of cigars is a great industry here; large capital is invested, and thousands of men, women, and children are employed in the business.

The cigar-makers are a distinct class of workmen; they consider their "caste" in life very high, much above other workmen.

A cigar-maker is too proud to make a "filler"—never does, if he can help it—but leaves that part of the process to their assistants, the women and children.

To illustrate how cigar-makers work, I can say from personal observation that most of them work at home, at so much per thousand. The tobacco (fillers and wrappers) is weighed and delivered to them, and they must return cigars and scraps of corresponding weight, an allowance of 2 per cent. being made for smoking and waste.

Cigar-makers always have an assistant (usually a girl), who prepares the "fillers" and wrappers for them. They usually marry their girl assistants; in fact, 90 per cent. of the cigar-makers do so, and after they begin to work well together the "lord of the manor" increases the pressure of work upon his "better half," thus giving him more time to play the elegant in beer saloons, &c., while his wife is attending to her babies and cigar-making at home.

Most of the quick and expert cigar-makers are very lazy; they usually "fool away" their time on Monday and Tuesday, begin to work in earnest Wednesday, and make up in the four days a good average week's work.

In large factories the cigar-makers work ten hours a day—from 7 a. m. to 12m. (with a half hour, 9 to 9.30, for lunch), and from 2 to 7 p. m. (with a half hour for "refreshments" from 4 to 4.30).

Cigar-makers here are very musical; they all belong to singing societies, and it is very amusing to hear them sing in these large factories. They sit at their tables with their assistants, and the more they sing the more they work, and I must say that the singing is very good.

I remarked to a proprietor that it struck me as rather peculiar, to say the least, to hear such singing and shouting in his otherwise orderly factory. "Oh," said he, "you certainly do not know the Germans yet; why, these workmen and girls would be perfectly miserable if I would prohibit singing in my factory. They would not do half the work they do now, and not half as well. In fact, I think they would leave me at once."

They are well posted in the current news, are good politicians, as every morning in these large factories a good reader is picked out to read the morning papers to them, while the other workmen each contribute so much to make up his amount of work while he reads.

Price per thousand for making cigars ranges from \$1.50 to \$4.

Average week's work (one cigar-maker and assistant) is from 2,000 to 2,500 cigars. Some exceptionally expert workmen can make 3,000 a week.

The assistants (filler-makers) earn from \$1.50 to \$3 per week, and are paid by the cigar-maker, though in most cases she is the cigar-maker's wife and gets nothing.

Packers, if working per thousand, earn about \$5 per week; if hired by the week, earn \$4. Box-finishers, that is, those who prepare the boxes, paste the paper in, &c., earn from 50 to 65 cents per 100 boxes.

The men who prepare the tobacco to be delivered to the cigar-makers and assistants earn \$3.50 to \$5 per week.

ALBERT LOENING,
Consul.

UNITED STATES CONSULATE,
Bremen, November 25, 1885.

[Inclosure.—Translation.]

Letter from Osnabruck Steel Works to Consul Loening.

OSNABRUCK, November 7, 1885.

After we have examined the questions forwarded to us in your esteemed favor of the 30th ultimo, we regret that we must inform you that we cannot comply with your wishes.

With high esteem, &c.,

Consul ALBERT LOENING,
Bremen.

COST OF LABOR AND SUBSISTENCE OF WORK-PEOPLE; HOUSE-WEAVERS AND THEIR CONDITION.

REPORT BY CONSUL DITHMAR, OF Breslau.

PRODUCTS OF AGRICULTURE.

Wheat, of which an average of 200,000 tons is produced annually in Silesia, is grown mainly on the left of the Oder, the sandy soil on the right side being better adapted for rye. Of all the cereals, rye takes the precedence in all parts of the province, the annual production being about 575,000 tons; oats follow, with about 375,000 tons, while of barley about the same amount is raised as of wheat. The average number of acres planted in wheat is 399,000, in rye 1,576,000, barley 406,000, oats 820,000, potatoes 785,000. Two and a half acres are estimated as necessary for the production of one ton of wheat, 2 $\frac{3}{4}$ acres for one ton of rye. These, however, are averages, the yield being more or less as the soil is productive or the reverse. Dr. Kare Birnbaum, in his revised edition of Block's Handbook for Landowners and Stewards (Breslau, 1885), gives the entire cost of producing one ton of wheat of best quality, including interest on cost of land, or rent, and on all machinery, implements, and stock, at \$34.13. This, prime wheat selling at present at \$36.41 per ton, is undoubtedly too high a figure for its production in Silesia; \$30 would seem to be a more reasonable estimate; but it must be borne in mind that straw and chaff have also a market value here, although wheat straw brings much less than rye; the latter is quoted at \$7.14 per ton. For taxing purposes the profits of an acre of land are estimated, according to the productiveness of the soil in the various districts of the province, at from 60 cents to \$4.30; these amounts are, however, in most instances far below the real profits. The freight rates vary according to the destination, the distance, and the amount transported. In cargoes of not less than ten tons wheat is carried by rail from here to Berlin at 1 $\frac{1}{2}$ cents per ton and mile, to Dresden at 1 $\frac{3}{4}$ cents per ton and mile.

Oberamtman Rost, proprietor of a large estate a few miles from Breslau, answers the inquiries in respect to the products of agriculture as follows:

The soil and its productiveness vary greatly in the different districts of the province, yielding in some places a clear profit per hectare (2.471—or nearly 2 $\frac{1}{2}$ —acres) of \$9.43, in others of only 29 cents. The classification of the farms made in 1865 by disinterested experts, in order to ascertain the average profits as a basis for the state tax, divided the land, according to its productiveness, into eight classes.

In the circuit of Wohlan, for instance, not far distant from Breslau, the estimates

then made, and according to which the state tax is still levied, were as follows per hectare of tilled land :

Class.	Clear profit.	Class.	Clear profit.
Class 1	\$0 43	Class 5	\$2 80
Class 2	7 71	Class 6	1 74
Class 3	5 14	Class 7	86
Class 4	4 00	Class 8	29

Meadow and pasture lands, gardens and woodlands, are assessed in like manner, except that the timber on the woodland escapes taxation, the soil being classified according to its fertility. This classification, as already stated, forms the basis for levying the state tax, which amounts to one-tenth of the estimated clear profit. It forms also the basis for all transactions in real estate, whether sales or leases.

AGRICULTURAL LABOR.

The conditions of agricultural labor are these: The laborers usually live upon the estate and are employed upon it the year round. The working hours are, in summer from 6 a. m. to 7 p. m., in winter from sunrise to sunset. The laborer's wages, in cash and in kind, are on no two estates precisely alike. A fair average of the receipts of a laborer's family is the following: Free lodging, consisting of one large room and a small bed-room; free fuel (on most estates there is wood or turf, and the laborer gets 5,000 pieces of turf, two or three loads of dead tree branches, and one load of cord-wood; where there is no turf or woodland, cash is paid as an equivalent, and the employer provides the teams for bringing home the purchased fuel). It is customary, also, to allow the laborer's family the use of one hundred square rods of land for raising potatoes. If the soil is poor the "patch" is increased, sometimes to an acre. Twenty to thirty square rods are also set apart for a vegetable garden, near the laborer's dwelling. As direct wages he receives per annum \$19 to \$23.80 in cash, and the following farm produce: 24 to 27 bushels rye, 3 bushels barley, 3 bushels peas, 1½ bushels wheat. Light and clothing do not concern the employer, and are inexpensive. The wife of a farm laborer is bound to work in the field whenever required, and receives for a day's work in summer 12 to 14 cents, in winter 10 to 12 cents. At some places the laborer's family is required to keep a maid servant or stout lad, who must work upon the farm, getting therefor the same cash wages as the wife, while the laborer's pay in produce is somewhat increased.

Of tea, meat, tobacco, schnaps, the farm laborer gets but little; if he smokes a pipe it is but seldom, and his tobacco is unmanufactured leaf. In harvest time he is treated to schnaps to encourage him in his work.

The state or Government tax is no longer paid by farm laborers; the communal income tax amounts to 50 to 75 cents per year.

COST OF PRODUCTION.

The cost of the production of a ton of wheat depends largely upon the nature of the soil. Given a rich but friable soil that can be worked under all conditions of the weather, and the cost of production is much less than with a tough, clayey soil. With a good light soil, for instance, eight horses are considered ample for the plowing, harrowing, &c., of 100 hectares (247 acres), while on a stiff loamy soil twelve horses are necessary for the same amount of work. Including two or three plowings, four harrowings, sowing, cutting, harvesting, thrashing, wear and tear, maintenance of men and animals, and not forgetting the value of the manure, the cost of producing a ton of wheat will average from \$26.18 to \$28.57.

How and at what cost the farm products are brought to market depends entirely upon the location of the farm—whether it is situated near a railway station or a navigable river, or the reverse. It may be stated that the average distance of farms from the place where the produce is disposed of, in this province, is 5 to 8½ miles, and as the farm products are always transported by team, the cost, calculating on a distance of 8 miles, would be 8½ to 11 cents per mile and ton.

The import duty on wheat is 36 cents per hundred-weight; on barley, 18 cents per hundred-weight. Potatoes and sugar-beets can be imported free.

Whether and in what manner farm products are exported I cannot inform you. This can be learned at the statistical office in Berlin. Farm products are delivered at the railway stations and boat-landings carriage free.

IMPLEMENTS AND MACHINERY.

The machines and implements used are on all larger estates the most modern, embracing steam plows, for deep plowing, especially of sugar-fields; steam thrashers (on smaller estates horse-power), extirpators, top-soil plows, American plows, Mecklenburg hoes, a variety of drill-machines, fertilizer distributors, barrows of various construction, crushing mills, potato-diggers, grubbers, hay-rakes, &c. They are mostly manufactured in Germany, except the steam thrashers and steam plows, for which we are still in a great measure dependent upon England.

FOOD.

As a cheap and nutritious diet for a farm laborer's family, consisting of himself, wife, and five children under twelve years of age, the following is given by a writer on economic subjects:

Daily, 5 pounds bread, 3.3 grams butter, 2 quarts milk, 5½ cents; coffee and chicory, 1 cent; together, 6½ cents per day; or per week, 45 cents. On Monday, 1½ pounds peas, ½ pound pork, 6 cents; Tuesday, 1½ pounds white beans, ½ pound pork, 8½ cents; Wednesday, 1 pound millet, 2 quarts milk, 4½ cents; Thursday, 1½ pounds lentils, ½ pound pork, 7½ cents; Friday, 1½ pounds groats, ½ pound lean beef, 9 cents; Saturday, 4 quarts potatoes, 2½ herrings, 7 cents; Sunday, 5 quarts potatoes, ½ pound wheat flour, ½ pound pork, 2½ cents. Total for the week, \$1.09½, or \$57 a year.

MINES AND FURNACES.

The secretary of the Upper Silesian Mining and Smelting Association, one of the gentlemen to whom I applied for information, replied as follows:

I am not able to give you a description of individual mines or furnaces; such accounts will appear in due time in the Statistical History of the Mining Districts of Prussia. For Upper Silesia no such facts have yet appeared in print. The Mining and Smelting Association has appointed a commission to investigate the condition of labor in the mining and smelting district, but it has not yet reported.

The following table shows the average annual earnings of coal miners for the last five years, the average value per ton of coal, and the cost of the labor in producing the coal:

Year.	Wages.	Value per ton.	Cost of labor.
			<i>Per cent.</i>
1880	\$125 03	\$0 90	45.00
1881	130 24	86	49.69
1882	127 00	87	49.59
1883	135 37	88	47.18
1884	130 73	88	47.32

The following table gives the earnings per day for the last four years of coal and ore miners, and of all mine laborers:

Wages per day of miners and mine laborers.

Mines.	Foremen, engineers, carpenters, &c.	Miners.	Mine laborers transporting coal.	Other laborers in mines.	Minors.	Laborers outside of mines.	Women.
Coal mines:							
1881	\$0 49	\$0 53½	\$0 35	\$0 24	\$0 17	\$0 33	\$0 16½
1882	51	54	35½	23	16	35	16½
1883	52	56	37	25½	16½	34	17
1884	52	58	38	24½	16½	34½	17
Ore mines:							
1881	46	41	32½	26½	15	32	16½
1882	46	40½	33	26½	15	32	16½
1883	45½	42	34	28½	15	32	16½
1884	52½	44½	35	29	15	34	18½

Amount of supplies purchased by a miner's family at a co-operative store in the course of a year, and their cost per month and year.

Articles.	Amount per year.	Cost per month.	Cost per year.
Flour and bread..... cwt.	12.10	\$3 10½	\$37 24
Sugar..... pounds	87	63	7 58
Coffee..... do.	15	26½	3 20
Soap..... do.	41½	31	3 72
Soda..... do.	35½	5½	66
Starch..... do.	9	31½	3 78
Schnapps..... do.	47	15½	1 88
Salt..... do.	94	24	2 88
Cheese..... do.	7	21½	2 58
Butter and lard..... do.	16	26½	3 18
Groats..... do.	94	76	2 94
Pulse..... cwt.	1.08	69	8 28
Petroleum..... pounds.	76	65	7 82
Fodder meal..... cwt.	7.02	6 52½	15 08
Total.....			25 08
Rent.....			4 56
Clothing.....			
Milk, taxes, rates, &c.....			
Total.....			123 82

The average wages of a miner being \$128.82, and these supplies being for a family of 6 to 8 persons, it is probable that the aggregate earnings, added to the dividend of 8 per cent. on the expenditure of \$78.32, leave a large surplus; this is, however, usually absorbed by the other household and personal necessities not furnished by the co-operative store.

In 1883, 80,247 persons were employed in the 333 mines and 225 smelteries in Silesia. It is estimated that 210,000 persons in all were supported by mine and furnace labor. Of the 100,000 tons of zinc produced in the German Empire, Silesia produced about 72,000 tons. The ores are zincblende and calamine, the latter cropping out on the surface in a number of places. The average depth of the zinc mines is 200 yards; in none does the depth exceed 230 yards.

METAL INDUSTRIES.

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ZINC MINES.

Year.	Value per ton.	Average wages per year.	Proportion of wages to value of ore.
1880.....	\$3 24	\$94 73	43. 67
1881.....	2 33	95 23	52. 80
1882.....	2 53	94 92	44. 54
1883.....	1 89	96 05	54. 60
1884.....	2 92	95 37	51. 75

IRON MINES.

Year.	Number of laborers.			Aggregate wages.	Average per head.	Amount and value of ores mined.		
	Males.	Females.	Total.			Tons.	Average value per ton.	Production per head of the laborers.
1880.....	1, 585	1, 040	2, 625	\$189, 295 90	\$72 17	502, 149	\$0 81	Tons. 183. 97
1881.....	1, 943	1, 823	3, 266	228, 268 42	70 00	644, 590	83 1/2	188. 55
1882.....	1, 957	1, 859	3, 316	239, 843 98	69 81	641, 342	83 1/2	182. 06
1883.....	2, 130	1, 310	3, 440	234, 611 35	68 20	670, 556	88	184. 41
1884.....	2, 286	1, 392	3, 678	269, 181 57	73 19	692, 171	88	183. 29

The low average per head of wages is due to the large proportion of female laborers.

IRON FURNACES.

Production of pig-iron and cast iron of first melting in 1884..... tons..	409, 170
Value of entire product	\$5, 243, 371 00
Value per ton.....	\$12 81
Number of laborers (men, 2,867; women, 896).....	3, 763
Cost of labor.....	\$539, 167 00

ZINC FURNACES.

Production of spelter, cadmium, and lead in 1884..... tons..	77, 376
Total value.....	\$4, 909, 006 00
Average per ton	\$63 44
Number of laborers (male, 4,311; female, 1,489).....	5, 800
Cost of labor	\$823, 108 00
Average per head.....	\$141 90
Cost of labor in producing ore from zinc.....	\$7 40

The dwellings of miners and furnacemen consist of a room and bed-room, with fodder-room and stable for pig. Room and bedroom have jointly an area of 39 square yards and 110 cubic yards measurement; cellar, 14½ square yards and 27½ cubic yards measurement; fodder-room and stable, 6 square yards and 11½ cubic measurement. Dwellings are on first and second floors. The rents range from 36 cents to \$1.19 per month.

The following are the supplies for one month, purchased at a co-operative store by a furnaceman's family of seven persons, in 1884:

Articles.	Cost.	Articles.	Cost.
Potatoes	\$0 60	Salt	\$0 17
Flour and bread	8 47	Cocoa tea	8
Sugar	79	Herrings	19
Coffee	30	Cheese	4
Chicory	16	Butter and lard	29
Soap and soda	25	Groats	24
Starch	7	Pulse	27
Schnapps	25	Petroleum	28
Tobacco and cigars	27	Bran for pig	77
Rice	13	Spices, &c	23
Dried plums	10	Dry goods, shoes, &c	85

Total for month, \$10; for year, \$120.

Other necessary expenses.

Articles.	Per month.	Per year.
Meat	\$3 57	\$42 84
Tailor and shoemaker	2 28	28 56
Rent	72	8 64
Taxes and rates	36	4 32
Co-operative store supplies	10 00	120 00
Total	17 03	204 36

STATISTICS OF A BARREL FACTORY.

Ground space of factory 45 by 171 feet, exclusive of engine and boiler house; extra space required by steaming and heating furnaces and jointing room, 98 by 62 feet; entire area used for factory and material, $1\frac{1}{2}$ acres, valued at \$1,071. The machinery and implements in use are:

1 large crozing-machine	\$476 00
1 machine for driving truss-hoops by power	357 00
2 machines for turning and smoothing barrels	214 20
1 machine for punching, flaring, and riveting iron hoops	238 00
6 setting-up forms and iron truss-hoops, each	7 14
1 machine for dressing rived and sawed staves	238 00
1 combined fan and stave jointer	357 00
1 stave equalizer, with reel feed and conveyer	214 20
1 machine for leveling and dressing heads of all sizes	238 00
1 machine for turning barrel heads of all sizes	285 60
1 machine for dressing and jointing heading	357 00
1 power windlass for stack barrels and kegs	190 00

The above are all of American manufacture.

One band-saw; 1 small boring-machine; 1 boring-machine; 1 concave saw; 1 small circular saw; 2 exhausters; 2 large grindstones; 1 automatic emery grindstone; 1 80 horse-power engine; 2 Roots boilers.

Factory can turn out in ten hours 100 to 120 barrels, holding 158 to 172 gallons each.

Price of raw material (oak wood) per barrel, \$4.50; cost of making machine work, 24 cents; hand labor, 24 cents; in all, 48 cents. Selling price per barrel, \$6.66. Number of hoops, 8 to 10, of iron, $2\frac{1}{4}$ millimeters thick, 45 millimeters wide; thickness of staves, 45 millimeters.

THE HOUSE-WEAVING INDUSTRY.

Although no linen factories existed in Silesia previous to the beginning of this century, spinning being a secondary occupation for peasants and their wives and daughters, for soldiers and laboring men, and the distaff instead of the wheel being in common use until the end of the Napoleonic wars, the province, nevertheless, exported large quantities of linen via England to the American colonies. With the outbreak of the revolution this outlet ceased and destitution prevailed in the weaving districts. Frederick II promised the weavers relief, but their condition was not improved until after the treaty of Versailles. The linen exports from Silesia in 1783 and 1784 amounted to \$3,321,057, and in 1785 to \$4,327,130.

A master-weaver in the house-weaving district, other sources of information having failed, was requested to send two representative weavers to Breslau, at the expense of the consul, to be interrogated on the points regarding which information was desired, answered, after some time, as follows:

It is impracticable to send you two house-weavers, mainly for the reason that their intelligence is of so low an order that you would get no satisfactory answers to your interrogatories. I have, however, questioned two weavers from a district adjoining this, and send you herewith all the information that I, with my knowledge of the business, was able to extract from them.

No. 1 is engaged in weaving drilling exclusively, and is situated in regard to earnings much better than No. 2, but he has a wife and six children to support, who have no occupation beside that offered by his loom. His eldest daughter, who has for some time assisted him by spooling, will soon be able to work the loom, and the younger children, who at present are but little help, will soon be able to assist the family before starting in life for themselves. No. 1 loses a day every week (probably Sunday), inasmuch as he must deliver his work, thirteen miles away, and on his return home is too fatigued to work on that day. He considers his long walk, however, a needed recreation.

No. 1 works fourteen hours per day, and earns, with the aid of his spooler, 30 cents a day. To earn this amount he must finish 6 meters of drilling, 120 centimeters wide, of the same quality as is turned out by the power-loom. He works on an old wooden loom that originally cost \$7.14. He lives with his family in one room, with privilege on the drying-floor, and pays \$6.43 rent per year. Provisions for himself and family cost about \$1.90 cents per week. His answers as to details on this point, however, seemed so untrustworthy that I forbear filling out the schedule you sent me for the purpose. Besides rent and provisions his expenses are: $1\frac{1}{2}$ bushels of coal per week, 10 cents; 2 pounds petroleum, 8 cents; $\frac{1}{4}$ pound starch, $2\frac{1}{2}$ cents; 1 pound salt, $2\frac{1}{2}$ cents, or about 23 cents in all. Clothing and shoes for himself and family cost about \$21.50 a year.

[This would make a yearly expenditure of \$138.69, or about \$40 more than the weaver's earnings; either he has overstated his expenditures or his potato patch is uncommonly prolific.]

No. 2 weaves ticking, and works fourteen hours per day for 16 cents. His fabrics are of the same quality as those woven on power-looms. He weaves on an old wooden loom that originally cost \$7.14. He and his family—wife and one child—occupy one room, with some privilege in the loft. Coal and wood cost 20 cents a week; petroleum, 7 cents; starch, 2 cents; salt, 1 cent; coffee, 4 cents; chickory, 2 cents; sugar, 5 cents; his other provisions absorb the remainder of his earnings. If by good luck he can sell some surplus vegetables he buys some necessary article of clothing, if not, this luxury must be dispensed with.

In general the condition of the house-weavers is no better now than it was ten years ago; where they earn a few pfennigs more the cost of their necessities has also increased.

In regard to your question, "Why is the hand-loom still in so general use?" This is owing to a number of causes. In the first place, to establish a weaving or spinning mill requires more capital than most employing weavers possess or can borrow, while the interest on the plant, the wear and tear and other costs run on all the same whether the business is profitable or the reverse. Not so with the hand or house weaving, where the employer runs no risks, furnishes the material, pays for the work, and has no other outlay. With a small capital and some business capacity, every man can become an employer. Another important point is this: on the hand-loom the chain

or warp as well as the wool can be of cheaper and weaker yarn than if worked on a power-loom, making a considerable saving to the employer in the course of a year. Again, it is the custom in mechanical (machine) weaving to have the loom prepared for the weaver; on the hand-loom the house-weaver, unless some member of his family is competent to do the work, must affix the warp threads himself. In spite of these advantages the factory-weaver gets as much for his work as does the house-weaver; and although machine-woven fabrics are smoother and better finished, yet their enhanced cost gives hand-work an equal footing in the market.

Closely-woven and fine goods are now manufactured by only a few hand-weavers, the majority being competent to produce only the coarser and cheaper articles.

The occupation of house-weaving will continue to exist so long as there are districts like this, where the weaver is not able to support himself in any other way, and where the loom and all its appurtenances and tradition and its attendant poverty descend from generation to generation; and so long as the employing weaver can dispose advantageously of goods the production of which involves no further outlay on his part than the cost of the yarns.

HENRY DITHMAR,
Consul.

UNITED STATES CONSULATE,
Breslau, December, 4, 1885.

ELBERFELD.

REPORT OF CONSUL RHODES.

This district is rather a manufacturing than an agricultural one, and farming is carried on in a small way without much system, and in consequence it is difficult to generalize and draw conclusions in a methodical fashion as might be done where agricultural operations are conducted on a larger scale with good machinery and well-regulated labor. An effort, however, is made to reply to the interrogatories of the circular, as follows, on the

PRODUCTS OF AGRICULTURE.

The land is mostly hilly, the hills being of easy ascent and devoted more to pasturing than the cultivation of grain. The soil is ordinary, being neither rich nor poor, but is well nourished with the manure adapted to its needs. This land is worth from \$112 to \$225 per morgen.

The customary tenure of land is by leases of six or nine years, at the expiration of which they are generally renewed.

The customary rent of land worked under lease is very variable and depends on the situation and quality of the land. The lowest rent per annum is \$4.50 per morgen, and the highest \$9.75.

The tools chiefly used are spades and hoes of German manufacture.

Machinery is not largely used, and consists of horse-power thrashing-machines of German manufacture, English hay-turners (price \$45) and English horse-power rakes (price \$30). English mowing and sowing-machines are used, but not extensively, the unevenness of the land not admitting of their being employed to advantage.

The customary rates of wages of laborers are as follows: Men and women (the latter doing the same work as men) get 25 cents per diem and board and lodging, or 50 to 62½ cents a day without board and lodging. In the busy season skilled workmen frequently work by the piece, and earn as much as 75 to 87½ cents a day, they finding themselves. Laborers are engaged at fourteen days' notice, and are paid weekly in cash. Their hours of labor are from 5 to 12 a. m., with three-quarters of an hour intermission at 8 for breakfast; from 1 to 7 p. m., with half to three-quarters of an hour intermission at 4 for taking coffee and bread and butter.

Subsistence of laborers.—Little meat is eaten by laborers, and very rarely fish. The prices of meat are as follows:

	Per 100 pounds.
Beef, first quality	\$15 to \$15 75
Beef, second quality	13 to 14 50
Cow	10 to 11 25
Veal	13 to 14 50
Mutton	14 to 15 50
Pork	13 to 13 75

Dairy products and eggs.—Superior milk costs from 4½ to 5 cents a quart; an inferior quality as low as 2½ cents a quart. Fair butter sells from 33 to 40 cents a pound. A good deal of butter is imported from East Friesland, which sells at 25 cents a pound wholesale. At Mettmann, near Dusseldorf, artificial butter is extensively manufactured and retailed at 20 cents a pound, and when laborers use butter it is with this description they are fed. Eggs are sold at 44 cents for 25. The prices given for articles of food are those which prevail at the time this paper is prepared.

Bread.—Wheat, of which little is raised in this district, costs \$4 to \$4.25 for 200 pounds; rye, \$3.62½ to \$3.75 per 200 pounds; oats, \$3.75 per 200 pounds. Wheat flour costs about \$5.50 per 200 pounds; rye flour, \$4.50 per 200 pounds. The bread consumed by laborers is the black bread of the country, and is so extensively used that it may be considered national in its character. A seven-pound loaf of it costs from 15 to 16½ cents. Sometimes, as a luxury, a portion of gray rye bread is taken with the black.

Vegetables are not largely produced in the immediate neighborhood, and what are sold in the markets mostly come from the Dusseldorf and other districts, the prices varying greatly according to the season. Potatoes, which are largely consumed and of excellent quality, are sold at 75 cents for 100 pounds. Laborers living in the suburbs of the town generally have behind their dwellings a small piece of ground, where they raise a sufficient quantity of vegetables for their own use.

Fruit.—Pears and plums are abundant and cheap, but—at least from an American point of view—are very inferior. Grapes, also of an inferior quality, are sold in the markets, but they hardly reach the laboring class, being too dear. Good fruit, of any kind, is not produced here. Laborers occasionally eat apples, which resemble only in name the apples of the United States.

Tea and coffee.—Coffee costs 25 cents per pound; when mixed with roasted rye or barley grains it is sold cheaper. The rye or barley is frequently put in by the consumers themselves. Tea is not used at all by laborers and farmers, unless taken as medicine in cases of sickness.

Sugar or sirup.—Beet-sugar is much used, and costs, from 10 to 12½ cents a pound. A kind of sirup, the color of molasses and somewhat thicker, made out of apples and called "apfelorout," is largely consumed. It is eaten on bread and costs 10 cents a pound.

Sundries—spice, salt, &c.—Cinnamon is much used in the preparation of cooked meats, as well as in vegetables—also cloves. This prevails, however, more in the middle and upper class than in the lower, not from the absence of taste, but from economy.

Liquor made out of wheat and rye, called "corn brandy," costs from 20 to 25 cents a quart, but what is chiefly consumed by the laboring class is the potato brandy, costing 10 to 15 cents a quart. Beer is immoderately consumed by all classes, from the highest to the lowest.

Clothing (description, quantity, and cost, say, for one year).—The agricultural laborer usually wears modern shoes, a coarse woolen trouser, heavy woolen undershirt, with a "hickory" blouse-shirt over it, a straw hat in summer and a cap in winter. For one year the clothing of each woman and man costs about \$7.50, and each child \$2.50.

Shelter (description and rent of dwelling-places).—A family generally occupies from two to four rooms in a house with other tenants, or in a small house alone. These dwellings are usually let for three months at a time, at from \$23 to \$30 per annum. They are poorly constructed and not comfortable.

Application has been made to two or three farmers, and they affirmed that they did not themselves know "the cost of labor by the unit of customary measure by which products are sold," nor could they convert the cost of labor in the manner described in the circular.

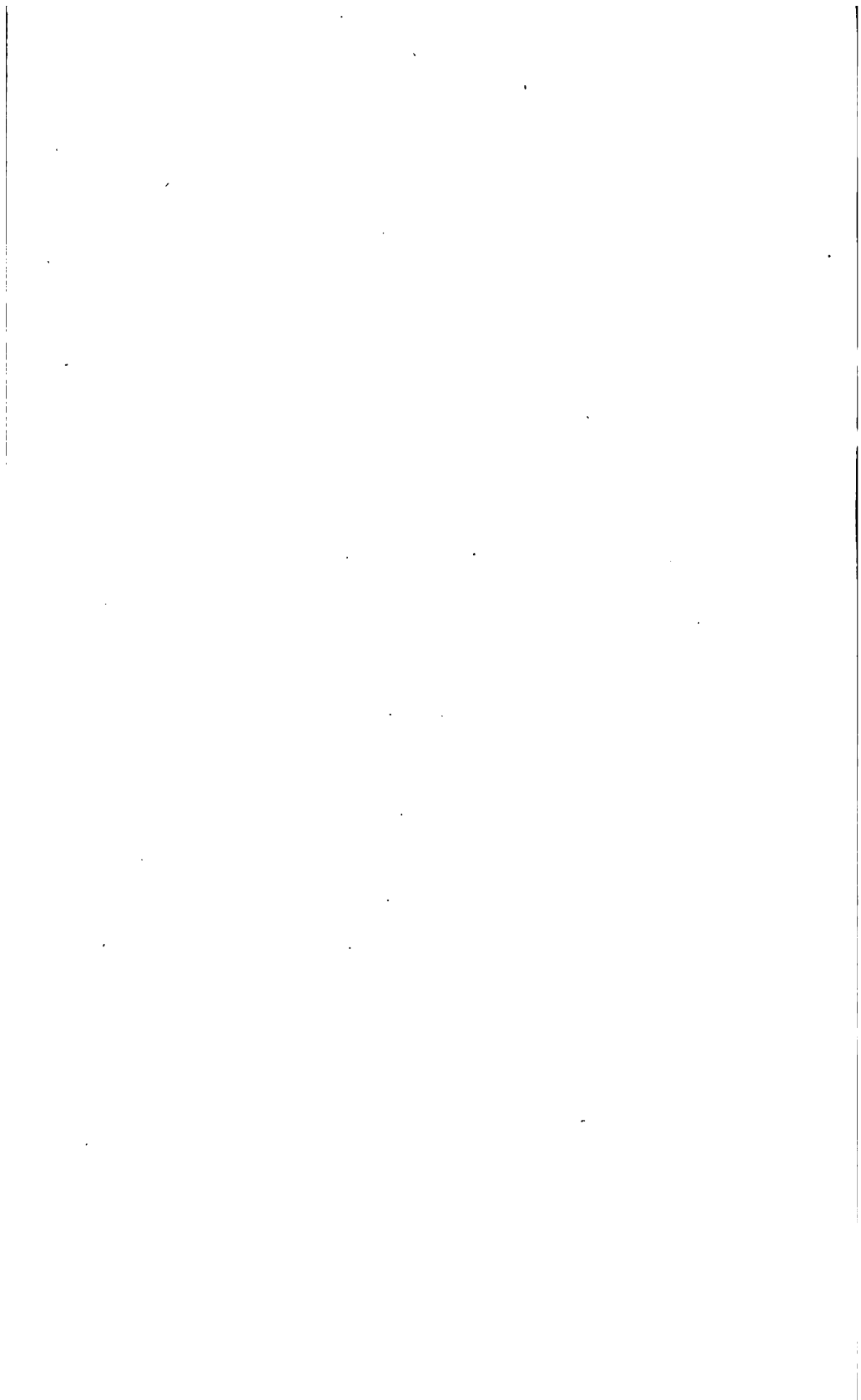
A clear statement of local or national taxes has not yet been obtained.

The products are consumed at home.

In the family of the farm laborer men, women, and children work, the last named beginning at a tender age. The wages are so low that it takes a long life of hard labor and uninterrupted health to provide for the humble wants of an old age. When this is broken in upon by compulsory military service, the task is nearly hopeless, and this is the explanation of the constant emigration. In consequence of his poverty, it is seldom that the laborer ever acquires the land he cultivates, notwithstanding his habit of saving something out of his meager wages, however little it may be. He is generally frugal, industrious, and honest. His only excesses are in the way of beer. He is a good subject, is easily governed, and is a valuable acquisition to a new state.

ALBERT RHODES,
United States Consul.

UNITED STATES CONSULATE,
Elberfeld, September 18, 1885.



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UNITED STATES CONSULAR REPORTS.

REPORTS

FROM THE

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ON THE

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OF THEIR

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CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC.

No. 67.—SEPTEMBER, 1886.

FLAX AND ITS MANUFACTURE.

REPORT OF CONSUL WILLIAMS, OF ROUEN.

My attention being more especially called to the flax industry on account of the late invention of the machine "Cardon" for stripping the same, and having received much instruction from the manufacturers as well as from recent publications on the subject, especially that of M. I. Mazier, attracting at present much attention on the continent of Europe, I have considered that my countrymen would equally benefit by a word upon the cultivation and manufacture of flax in these European countries and the use of this and other machines. In these days of competition it becomes the American farmer and manufacturer to be well informed in regard to the capabilities to produce as well as the advances which have been made in perfecting the cultivation and subsequent treatment of all staples, among which flax holds such a prominent place.

PRODUCTION OF FLAX IN EUROPE.

The different qualities of flax, varying with the soil and season and care taken in cultivation as well as the mode adopted in transforming the rough flax into thread, render it difficult to closely approximate to the actual production in each country. This accounts for the wide difference between the quantity produced in Europe and that actually turned out from the factories. These, notwithstanding all their improvements, are able to utilize only a fraction of the material harvested.

Although flax is of Asiatic origin, all of the flax used is of European production.

Production of flax in the principal countries.

Country.	Flax.	Shipped flax.	Average yield per hectare.
	<i>Hectares.*</i>	<i>Tons.†</i>	
Germany, 1884.....	129,810	76,163	589
England, 1884.....	2,088	970	465
Austria, 1884.....	89,433	43,196	453
Belgium, 1884.....	36,896	19,407	526
Denmark, 1884.....	2,517	797	317
Egypt, 1884.....	6,000	1,902	317
France, 1884.....	68,695	39,224	571
Greece, 1884.....	383	120	315
Holland, 1884.....	16,891	9,543	565
Hungary, 1884.....	10,527	5,084	483
Ireland, 1884.....	45,894	21,096	465
Italy, 1884.....	82,453	23,581	286
Russia, 1885.....	1,085,550	844,119	317
Total.....	1,576,137	585,204	

* 2½ acres.

† Of 1,000 kilos.

Russia holds the first rank in flax production, furnishing two-thirds of the total amount produced, while next to Italy it yields the smallest proportion of thread to the raw material. If that large country cultivated, rotted, and stripped its flax in a proper manner, it would produce a third more than it now does, which would be equal to a pecuniary advantage of 100,000,000 francs per annum. Independent of this large crop of flax, Russia sowed in 1885 more than 200,000 hectares of hemp.

Germany ranks highest in net returns; Austria has passable results; Italy is absolutely inferior.

FLAX INTERESTS OF FRANCE.

France holds only the fifth rank, while she and Belgium have the land, soil, and climate best adapted to the favorable growth of flax, and in many places the best facilities for rotting, and in certain parts of the country, mostly in the north, the best methods of cultivation. It is confidently expected that flax cultivation, which has been greatly depressed and diminished, will receive a new impetus from the invention of the machine "Cardon."

French imports of flax, from official documents.

Description.	1882.	1883.	1884.	1885.	Country from whence imported.
	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	<i>Kilograms.</i>	
Green or rotted flax.....	1,468,640	1,305,967	1,327,500	1,577,172	
Stripped flax.....	574,688	340,824	398,627	295,648	
Do.....	10,305,908	10,182,548	10,048,516	11,619,400	England.
Do.....	4,343,212	2,534,013	1,982,057	864,962	Belgium.
Do.....	58,814,686	44,967,261	51,560,677	48,208,130	Germany.
Do.....	1,472,690	1,901,392	1,271,587	1,167,279	Russia.
Total.....	75,511,190	59,926,038	65,261,464	62,155,419	Other countries.
Hemp.....	6,998,477	6,887,414	10,514,733	10,394,485	

The above figures represented at a moderate estimate the production of about 150,000 hectares (2½ acres=1 hectare) of flax, producing about 400 kilos per acre of flax and seed. Russia alone must sow about 160,000 hectares to furnish its fifty millions of kilos, as the average yield in that country is about 317 kilos per hectare.

Flax can be profitably raised in a large portion of France; the foreign competition, especially that of Belgium and Russia, has had a tendency

to diminish the acreage formerly devoted to this culture to such an extent that only about two-fifths of the amount used is of native production.

The flax of Lys is most esteemed, and is of a greenish-gray or yellowish-white, and produces the finest thread, of superior quality. Then follow the flaxes of Hasnon, Bergnes, Flines, Wavrin, Donai, &c., some rotted by water, others on land, and varying in quality and value.

Normandy furnishes flax called Bernai and Constances, rotted by water, and that of Caux rotted on land; the former of good quality, the latter badly rotted, of no strength, checked and brittle.

Picardy, chiefly in the department of Somme, produces flax principally rotted on the fields. This flax is reddish-brown or bluish-gray. It is often gummy, like hemp which has been wet between the time of gathering and rotting. It is then difficult to bleach.

Those engaged in rotting hemp in Somme often damage excellent, well-harvested flax in the process.

In Maine-et-Loire flax is rotted by running water. It is yellow, strong and pliable, but badly stripped. This department also produces a flax sown in the autumn (Spanish flax) which is hard, dry, and unnatural. The flax of this department is used in the manufacture of shoemakers' thread and ships' sails.

The flax of Mayenne and of the Côtes du Nord is fairly fine and readily spun.

La Vendée du côté de Fontenay-le-Comte produces green flax, fine and of good quality, but very badly stripped. The other parts of Brittany produce fair flax, but badly rotted, and worse stripped, having therefore neither strength nor pliability; so much so that one could imagine that the process of rotting and stripping was undertaken with the sole object of deteriorating the value of the raw material.

BELGIAN FLAX.

France does not equal Belgium in its flax product, and can therefore advantageously take lessons from that Kingdom. The difference of value in the products of flax can be more readily appreciated by reference to the annexed tables.

Prices of flax, called "de pays," in distinction of Netherlands.

Date.	Courtrai, Lys.	Belgique- Hollande.	Frise.	Flines, Wavrin, Moy.	Donai, jaunes.	Bergnes.	Wallons, pays.	Picards.
February, 1884:								
Common.....	120-140	115-130	95-110	115-120	110-120	100-110	90-105	30-90
Ordinary.....	150-180	135-155	115-125	125-135	120-130	115-120	110-120	95-100
Good.....	190-250	160-170	130-150	145-180	140-160	125-135	125-135	100-105
Superior.....	270-400	180-230	155-180	185-220	165-180	140-145	140-145	105-110
May, 1884:								
Common.....	120-140	120-135	90-105	110-120	110-120	100-110	85-105	80-90
Ordinary.....	150-180	140-160	110-125	125-135	125-135	115-120	110-120	95-100
Good.....	190-250	165-175	130-150	140-175	140-160	125-135	125-130	100-105
Superior.....	270-400	180-230	155-190	180-230	165-180	140-145	135-140	105-110
January, 1885:								
Common.....	140-160	130-140	170-115	125-135	120-130	120-125	115-120	105-110
Ordinary.....	170-190	145-155	120-125	140-145	130-140	130-135	125-130	110-115
Good.....	200-300	160-190	130-160	150-165	140-145	140-145	135-140	112-115
Superior.....	300-400	200-250	170-200	170-180	150-170	145-150	140-145	115-120
June, 1885:								
Common.....	140-160	135-145	100-115	130-135	125-135	125-130	115-120	105-110
Ordinary.....	165-185	150-160	120-130	140-150	140-145	130-135	125-130	110-115
Good.....	190-250	170-180	135-160	155-165	150-160	135-140	135-140	115-118
Superior.....	260-350	190-210	170-190	170-180	160-170	140-145	145-150	118-122
November, 1885:								
Common.....	120-150	120-135	95-110	130-135	125-135	115-125	105-120	105-110
Ordinary.....	155-180	140-150	115-130	140-150	140-155	130-135	125-130	110-115
Good.....	185-220	160-175	135-150	155-165	150-155	140-145	135-140	115-118
Superior.....	240-350	180-210	160-190	170-180	160-165	145-155	140-145	118-120

HOLLAND FLAX.

Prices of Riga flax, free on board at Riga.

[Les mark "K" is the basis of these prices.]

Year.	January.	February.	March.	April.	May.	June.	July.	August.	September.	October.	November.	December.
1860.....	110. 00										138. 00	
1861.....		120. 00										104. 50
1862.....				116. 00					142. 00			123. 00
1863.....		135. 50										120. 00
1864.....				128. 00			140. 00					105. 00
1865.....				96. 50		125. 00						139. 00
1866.....		150. 00			182. 00							137. 00
1867.....	125. 00						143. 00					102. 00
1868.....			123. 00			115. 00						143. 00
1869.....						125. 00						92. 00
1870.....		98. 00			115. 00		92. 00					
1871.....			110. 00			120. 00	110. 00			122. 00	98. 00	
1872.....	127. 00							108. 00				107. 00
1873.....								102. 00				96. 00
1874.....								102. 00				100. 00
1875.....			87. 00			106. 00					120. 00	
1876.....							120. 00	90. 00	95. 00			84. 00
1877.....	90. 00						106. 00					
1878.....		90. 00		85. 00				78. 00				70. 00
1879.....	71. 50		98. 00			78. 00						86. 50
1880.....	93. 00	89. 00			86. 00					73. 50		
1881.....	71. 00				62. 50						65. 50	62. 00
1882.....	61. 00	59. 00	55. 00					62. 50				57. 50
1883.....		58. 00	64. 00						55. 50	58. 50		
1884.....	57. 00	60. 00	58. 50			61. 00	59. 50					68. 50
1885.....	74. 50	76. 50				76. 00				71. 00		70. 50
1886.....	73. 50	77. 00										

As before stated, and as the above tables show, the flax of Belgium is unrivaled, and that country, after Russia, furnishes the greater part of the flax used in France, supplying 12,000,000 of kilograms annually, or one-tenth of the annual consumption. The Belgians excel in culture, rotting, and stripping of this plant.

All of the provinces, except Luxembourg, contain suitable soil, but even Russian flax has interfered with the extension of the cultivation of flax. It must continue to supply to a certain extent the deficiency of France until that enlightened adaptation of crops suitable to the soil and climate of the country becomes more widespread, and teaches the French farmer that his individual efforts can accomplish greater results than the Government aid can possibly bestow.

Belgium has already shown its appreciation of the newly-invented machine "Cardon," and has purchased for 500,000 francs the patent for the Kingdom, and has already several of the machines in use, and many more in process of construction.

HOLLAND FLAX.

Independent of Russia and Belgium, France obtains a certain amount of flax from the Netherlands.

Holland cultivates 16,891 hectares of flax, yielding an average return of 565 kilograms of stripped flax, per hectare, making a total of 9,540,000 kilograms, which are principally exported to Belgium, France, and Germany.

The flax harvested in Holland is generally of good quality, although

some land is urged too much, and produces a hollow and unnatural stalk. This production is thus distributed :

Province.	Quantity.	Province.	Quantity.
	<i>Hectares.</i>		<i>Hectares.</i>
Groningen.....	1,463	Friesland.....	4,292
Drenthe.....	33	Overysel.....	343
Gelderland.....	279	Noord Holland.....	1,275
Zuid Holland.....	2,483	Zeeland.....	3,630
Noord Brabant.....	2,500	Limburg.....	360

Rotting and stripping are not well understood, and the brackish water in which it is rotted deteriorates the quality. The stripped flax in Friesland is of dark color, hard, dry, and difficult to spin.

Zeeland has a good quality, white and supple.

Southern Holland produces blue flax.

RUSSIA.

Russia supplies or (to use the emphatic term applied to all countries which generously supply deficiencies) inundates the rest of Europe and a part of America and India with its flax.

All the flax spinning industry of Europe is under tribute to this vast country, which sows every year nearly 1,100,000 hectares of flax, and more than 200,000 hectares of hemp. Newly cleared and prairie lands are chiefly devoted to its culture.

The mode of culture is primitive. Urged forward by land strong in its native richness, the yield is often of a hollow light, and feeble nature. Rotting it in stagnant water, the flax becomes putrid, on account of the water not being changed after each rotting, or, when effected on land, it is not more successful. Again, when taken from the water and extended to dry, it is often overtaken by frost and snow, and adheres to the ground, from which it is impossible to remove all the fibrous portions without injury. Rotted in different modes, the color varies.

Russian flax is of tender nature, gives poor returns in carding, and is mostly used mixed with French and Belgian flax. The best brands are those of Archangel, St. Petersburg, and Riga.

THE BEST VARIETIES OF FLAX.

This article is written to assist the practical agriculturist and merchants and manufacturers in discriminating among the different varieties of flax, and therefore the inquiry will not be pressed into the origin and technical varieties of botanists, which number something like a hundred. It is the ordinary flax, such as is the most remunerative, of which I will undertake to describe the culture and treatment.

This plant has a hollow stalk, straight and cylindrical, attains a height of 40 inches, but sometimes does not exceed 2 feet. The blossoms have five petals, blue, of a violet tinge, the leaves narrow, branching, and alternately distributed along the stalk. The berry, ripe and well formed, has the shape of a round capsule, running to a point at the top and divided into five lobes, these being subdivided into ten little cells, each one of which contains a brown grain or seed, bright and generally long and flat. This is a description of the variety of flax which

is the only sort which can be profitably cultivated in France. The different subvarieties of the flax raised in France can be brought under four heads, and differ but slightly from one another. They may thus be briefly described:

(1) Common flax from seed many times reproduced in the same locality. This flax branches out and attains a height of only 23 to 25 inches; besides, the thread made from it is only middling.

(2) The flax known as Riga, the seed of which is imported from Russia, branches out less, and attains, under favorable atmospheric conditions, a height of more than 40 inches, and produces a fine silky thread. This flax is especially cultivated in Flanders.

(3) Flax with white blossoms is from seed brought from Russia. This plant is more hardy, its thread strong and of good quality, but the stalk does not attain a height of more than 25 inches.

(4) A flax which is a seedling from that grown in Flanders by the seeds known as extra Puych, or of Puych-Krown. The thread from this flax is fine and more silky than that of Riga.

Regarding winter flax of Spanish origin, it furnishes only a rough, coarse thread, and its cultivation is impracticable in France, and only thrives in Spain.

Without entering into the chemical analysis of flax it may be stated that the result in all cases has demonstrated that flax is rich in alkalies based on soda, in lime, and in phosphoric acid, differing, however, according to the various localities where it is raised.

The result of analysis shows that the flax of the north and Flanders is rich in potash, nearly 30 per cent.; phosphoric acid, 12 per cent.; carbonic acid, 26 per cent.; and lime, 17 per cent.

The flax of the Netherlands gives, potash, 18 per cent.; soda, 19 per cent.; phosphoric acid, 10 per cent.; carbonic acid, 14 per cent.; and lime, 19 per cent. The flax of England and Ireland contains potash, 7 per cent.; soda, 6 per cent.; lime, 22 per cent.; and carbonic acid, 1 per cent.

The best flax, that of France, Flanders, and Belgium, is rich in potash and phosphoric and carbonic acids; lime prevails in Dutch and English flax. And, again, the Flemish flax has scarcely a trace of silex, while the Dutch flax shows 4 to 6 per cent., and that raised in Scotland from 15 to 25 per cent. The Flemish flax contains 9 per cent. of chlorate of soda, while the others only show 3 to 5 per cent.

The constituents of flax indicate the absolute necessity of a judicious rotation of crops upon land where it is cultivated, which can thus enable it to recuperate; in many localities as many as from four to seven other crops are allowed to intervene.

The cultivation of flax has caused a careful analysis to be made, and much theory, as well as practice, has been applied to the subject, and I should advise a flax grower to avail himself of this information, procurable from the publications of many French writers on the culture, gathering, and rotting, but time would fail me to condense in an intelligible shape even a few of the most important publications on its management. I cannot precisely determine how much of these details might interest or be beneficial to our farmers, and if I pass it by on this occasion, it will be only to return to it in future, if desired.

CALCULATION OF THE AVERAGE COST OF FLAX PER ACRE.

Cost of outfit for a "one-horse farm" of 7 hectares.

	Francs.
Interest 5 per cent. on material needed, at 5,000 francs	250
Depreciation on part, 3,000 francs, at 10 per cent.	300
Depreciation on balance, 2,000 francs, at 5 per cent.	100
Depreciation annually of horse	70
Risks of accidents, blight, &c.	30
For 7 hectares (about 107 francs per hectare)	750

Average annual expense in 1885.

	Francs.
Rent of land	125
Taxes	22
Manures, old and new	283
Seed	120
Weeding	50
Tillage and harrowing	65
Gathering and stacking	70
Interest and depreciation, as above	107
	842

The price of flax is to-day the same as twenty years ago, while the cost of culture has risen. Workmen then were hired at 0.55 franc per day and board, while to-day the same laborers are paid 1.50 francs per day and board, and now only one-twentieth of the farms are engaged in the culture, while then there were one-fifth.

Value of product per hectare.

	Francs.
Flax in straw	850
6 hectoliters of seed at 22 francs	132
	982

Comparing this sum of 982 francs with the cost of 842 francs, it will be seen that the farmer is scarcely remunerated, even in good years. These years are rare; hail, excessive heat, &c., often cause a loss of 50 per cent.

ROTTING OF FLAX.

In entering upon the subject of rotting of flax, I hope to be excused for apparent detail for two reasons: The first is that it is justly considered the most important of all the processes to which flax is subjected, and the other is that the French have apparently studied the subject very carefully. Their theory seems complete, but I will confine myself to the practice.

Upon this operation chiefly depends the good or bad quality of the thread, and if it is stopped too soon the filaments are not relieved of the foreign matter which unites them, and they remain dirty and so sticky that they cannot be separated without loss. If this rotting is continued too long, the character of the tissue is not only destroyed, but the fiber is changed, and the thread is of little value.

There are two plans adopted in regard to the time of rotting flax, both of which have their advocates, but the circumstances and situation as regards barn room, and the length of time permitting the rotting and subsequent drying to be completed before the season of frost and snow, are important factors in all cases. If barn-room is plenty, the flax can

be thrashed in winter, and the farmers of the north usually thrash out their seed during the winter, and sell the stalks deliverable in April or later. The machine Legris, although somewhat complicated, gives the most satisfaction, and imitates the thrashing by hand. Four men, with this machine, moved by power, can turn out 5,500 kilograms of stalks and put the stalks in bundles at a cost of 4 francs per 1,000 kilograms, all told. Practiced men carefully assort the stalks according to length, thickness, strength, and color. This separation is of the greatest importance; in fact, the coarse and fine stalks, those of different colors, stalks blackened in the field, others gathered standing or blown down by the wind, all require to be rotted by themselves. The destruction and transformation of gummy and other matter do not take place in all qualities alike.

ROTTING OF FLAX IN RUNNING WATER.

This mode of rotting flax has given the best results, and undoubtedly, whenever practicable, is preferable. The season for rotting in this manner extends from the 15th of April till the 10th of October; it would be very imprudent to go beyond this date, as there would be great risk of being unable to dry the flax. Coarse to middling flax can be rotted the same year that it is harvested, but for the better qualities it is desirable to defer the rotting till the next season.

It is useful and customary to test some small lots the same year, to arrive at the value of the crop.

This rotting by running water has been generally done by specialists, who make this their special care and employment. Any running stream can be used for this purpose, either by rotting in the stream itself, or in sluices—places where it can be made to drip continually upon the stalks. All clear and limpid waters, free from lime and iron, are suitable for this purpose, provided they do not flow too rapidly, or are not subject to troublesome rising, and do not bear a yellow tint, indicating that they are charged with sand.

Very fine flax, such as that found in the vicinity of Tournai (Belgium) and Valenciennes, requires a hard, cold water, because the very delicate fibers require that the pectique fermentation take place slowly, in order that they may not be changed.

In speaking of the manner of treating flax, the first place is always assigned to that rotted in the river Lys, but that which gives it special value is that the river is filled with boxes for rotting flax from May to September, which keep the waters in a constant state of fermentation. The frames containing the flax communicate to one another the globules of fermentation and the elements necessary to change the gummy matter. These globules of leaven and other chemical elements are gathered up by the water as soon as the first boxes of flax begin to ferment. This is found to be the same, also, in the river Oise, the first flax submitted to the action of the water never being rotted (temperature being equal) as soon as that which was put in when the rotting was in full action. The more of this leaven coming directly from flax which a stream holds, the better will be the quality of the thread, if this is not pushed too far, to a state of putridity, as often occurs in the use of stagnant water.

From all parts of Belgium and the north of France large quantities of flax are sent to the river Lys, where, in 1865, it was computed 50,000 workmen were employed in rotting and stripping flax.

The best temperature for the water is considered to be that of the spring and autumn, which, then, is not higher than 20° centigrade (66° Fahr.).

The bundles of flax, weighing from 3 to 3½ kilograms, are lightly bound together in pairs, butt and ends being inverted. They are then placed vertically in frames prepared for them, which are square boxes, without covers, about 4 feet high and 14 to 16 feet in length. They are protected from the débris of the river by a bed of straw placed in the boxes. These boxes are covered with another layer of straw held down by planks loaded with weights, so as to keep them in place, and always keep the flax below the surface of the water. These boxes, termed here "ballons," are then pushed into the stream as far as possible, and where the current is as slight as can be found. They are then anchored by the aid of chains and posts, and raised from the bed of the stream, so that they cannot be affected by the sands of the bottom, and so managed that they will rise and fall with the stream.

The time necessary for the flax to remain in water varies from 8 to 15 days, according to the temperature and atmospheric conditions. Electricity influences the operation, and in stormy weather the "ballons" must be constantly watched to avoid the destruction of the fiber by too rapid fermentation.

The foremen of these works determine when the rotting has reached the proper point, which is readily recognized by those familiar with the process.

The cost of rotting in the river Lys is 5.50 francs per 1,100 kilograms in the straw, which is the average weight of a "ballon." The shrinkage of flax in rotting is about 25 per cent.; there remain, therefore, 825 kilograms of rotted flax, which give 25 per cent. of stripped flax, say 206 kilograms. Therefore 100 kilograms of stripped flax cost 2.65 francs for rotting.

If it is bleached on the meadows the cost is 13 francs per "ballon," but this is a supplementary process only given to the best flax.

Since the universal adoption of the bleaching process of thread by the chloride of lime (Berthollet process), only the very best of qualities are bleached upon the ground.

ROTTING IN STAGNANT WATER.

Although the superiority of the rotting by running water is acknowledged, yet it is not practicable in all cases, and ponds, vats, and sluices have been thus utilized. As in the preceding mode of rotting, the flax is plucked as soon as it is ripe, and strewn over the ground some days until the grain is dry, then thrashed and bundled. These bundles are placed horizontally in the vat, and are turned at least six times to thoroughly complete the rotting. The time preferred for doing this is in September or October. These vats or ponds are used from year to year, and the older they are the more they are prized, as the sediment which is accumulated in them becomes rich in microbes.

Experience has demonstrated that the rotting is hastened in the waters of turf pits, which are nothing but vegetable matter, which abounds in the shape of dormant spores.

These bog-pits are so much used in Ireland for this purpose that the operation is called "bogging," and the bog-holes are said to do well for rotting flax.

Rotting in stagnant water is the quickest mode, but requires the most careful watching to avoid the ill effects which are apt to ensue from too rapid fermentation, and consequent destruction of fiber.

Although the odor arising from these pits is exceedingly disagreeable, it is said to be not unhealthy, and workmen employed daily and entering waist-deep in these stagnant waters are not affected by them.

A simple mode of disinfecting these ditches which has been employed for purifying putrid water in China could be advantageously resorted to in this case. It consists in covering them with the leaves of water-lilies, which have the property of absorbing miasma. These large leaves spread upon the surface are more effective than other plants, but the same disinfecting properties belong to green leaves of all kinds.

It is sufficient to say that chemical rotting has never proved successful. Simple and compound bodies, acids, alkalies, and neutrals have not answered the desiderata of inventors, and the nomenclature therefore would have no interest.

MECHANICAL ROTTING.

Numerous attempts at rotting by machinery have been made without success, mainly attributable to ignorance in regard to the theory of fermentation required for flax.

One has obtained a considerable notoriety for many years, that of our own countryman Schenck, which utilizes the condensed steam, in expectation of obtaining from it a rotting power. Not having had an opportunity of seeing it in use, I would not pass judgment upon it, and, with all due respect to the foreign opinion, which is very jealous of every article not first discovered on its own soil, and the property of its citizens, would say that it is claimed in France that the results are unsatisfactory in quantity and quality, and the flax becoming light and meager, is weakened, and that the expense is greater than by the rustic mode.

ROTTING ON THE GROUND.

This is generally practiced, although it is the longest and most uncertain. This flax is spread upon a field, meadow, or on young clover, and remains there from four to six weeks; meanwhile it is often turned from side to side by means of long poles passed under the stalks. If the weather is too dry the fermentation does not work well, likewise in case of excessive rain. The reason for preferring this mode of rotting is its cheapness, and the greater weight of rotted flax obtained. This additional weight is caused by imperfect separation, and consequent adhesion of the conjunctive tissue to the stalk.

Flax thus rotted is subject to greater loss in washing after spinning and weaving.

INSTANTANEOUS ROTTING.

Having cursorily glanced at the several different processes of rotting flax now in vogue on this side of the Atlantic, my inquiries have resulted in obtaining some information concerning an invention which by machinery more rapidly effects the rotting than by the rural mode. M. Parsy, instructed at the Lisle Industrial School, is the author of a process which he terms "instantaneous," which may be thus described:

The transformation of the matter which constitutes the conjunctive tissue, uniting the fibers of flax to the stalk which supports them, can be obtained in two ways, by fermentation or by heat applied in certain conditions. In fine, transformation is effected by the respiration of the mi-

crobes, or by chemical action. M. Kolb thus describes matter which surrounds textile fibers—that they consist of a mixture in various proportions of pectose (so called), of a matter white, fatty, waxy, odorous, greenish, of sugar, of albuminous or nitrous matter, of chlorophyl (derived from *chloros*, green; *phyllon*, leaf). This is the most complete analysis ever made of the gum of flax.

The most distinguished French chemists have all admitted the existence of a matter called “pectose,” which is transformed by this operation into soluble “pectine” and insoluble pectic acid. Pectose and pectic acid were discovered by Branscounot in 1831, the English nomenclature for which and many other scientific words I have vainly sought.

This pectic acid, according to M. Parsy, constitutes a sort of grease in the rotted flax, which gives it luster and facilitates the gliding of the fibers longitudinally during the various operations of spinning.

The detachment of the straw is a necessary consequence of the transformation of the pectose, as well as the division of the fibers of the flax, because the pectose interposed between them dilates during the operation, freeing the fibers, which are divided ad infinitum.

Practically to arrive at this result, M. Parsy submits flax to the action of water under pressure at about 150° centigrade (256° Fahr.), then terminates the operation by substituting steam for water, still under pressure. Submitted to the action of heated water, the pectose is transformed into pectine, and afterwards into pectic acid. The action of the vapor retains the temperature to a sufficient height to complete the transformation of the pectine and pectic acid, without losing any of the precious material.

The complete operation of rotting is thus effected in about an hour and a half.

M. Parsy has studied in an especial manner the colors of flax. His theory is, the tints of flax vary with the different localities where they are rotted.

Flax contains chlorophyl, green matter mingled with yellow and blue. This substance changes during the rotting and produces different tints, characteristic of the place where the flax is rotted. These come principally under two heads—

(1) Blue flax, the type of Bergnes, and this is generally rotted in stagnant water.

(2) Yellow flax, of the type of Douai; this is generally rotted in running water.

The blue color of the flax rotted in stagnant water is due to the action of the chlorophyl, and of the acidity of the water arising from the dissolution of the organic acids of the plant itself.

In flax rotted in running water, this local acid does not exist, the water being continually renewed. The proportion of bicarbonate of lime contained in the water explains the yellow tinge.

A portion of the pectic acid is decomposed as soon as it is formed, this salt of lime forming pectate of lime, which is washed away by the current.

Blue flax is generally more pliable than yellow; this is accounted for by its losing less pectic acid, the rotting being conducted in a locality slightly acid; on the contrary, the yellow flax loses its luster; that is to say, its pectic acid passes into the state of pectate of lime. To give to rotted flax the blue or yellow tint at will, M. Parsy proceeds with a water slightly acidulated by the plants (that which is obtained from a water once used in rotting), or with a water of which the acidity is destroyed by a few drops of alkali. In short, that which characterizes

the process of M. Parsy is that he employs successively hot water and vapor. The result of his experience and attempts to use water only has proved that flax thus treated lost 35 per cent. of its weight, and then was imperfectly rotted. In using vapor alone, this vapor in the presence of the organic acids of flax, deteriorates the fiber, which is burned and loses consistency.

The action of warm water is necessary to prepare the transformation of the pectose and take away and remove matters injurious to the rotting; afterward the vapor completes the process of forming the pectic acid without removing anything from it in the dissolution.

In his operations M. Parsy obtained flax which lost, as in ordinary rotting, 20 to 25 per cent. of its weight, and gave satisfaction in spinning.

This process is of such recent invention that I have waited to obtain reliable information, and to receive a sample of flax thus treated, which I herewith inclose. The owner of this patent is A. Dujardin, of Lille, France, the same party who holds the "Cardon" patent for stripping flax.

I am aware that an important point in the above process has been omitted, the mode of rapidly drying the flax, while preserving its peculiar qualities and color, such as would result from open-air drying. When this is ascertained, I hope to communicate how it can be accomplished.

RECENT INVENTIONS FOR STRIPPING FLAX.

Instead of stripping flax by scutching mills, a sort of beating process, in which, by rapid rotary movement, the flax is detached from the stalk, several inventors have completed, nearly simultaneously, new machines for stripping and carding the flax at the same time. These machines give good or bad results, according as the flax is well or badly rotted. In the first case 30 per cent. of stripped, combed flax is obtained, while in the second as little as 12 per cent. is netted.

The quality as well as the quantity is affected by the rotting. It makes a difference of 25 to 30 per cent. in the value.

The Cardon machine, described in part in a former report,* takes the flax in straw, after rotting, and turns it out admirably combed at the other end of the machine.

The flax is attacked in its passage through the machine by numerous metal pins impelled to and fro horizontally, and so arranged as to prick the stalk between them. Besides this action of pricking the textile fiber is subjected to an energetic friction, when the metal points, in moving back and forth, interlace one another. The straw pricked on all sides, divided into particles, falls down in dust, and it is claimed that this dust contains no fiber. I certainly could not detect any by the closest examination when viewing the machine at work.

The flax being thus liberated from the straw continues its way, and encounters the fans of a machine which removes any traces of stalk which may still adhere. It is claimed that by this process, with an equal weight of flax in straw, as much carded flax can be obtained as of stripped flax formerly.

As before seen, the well-rotted flax of Belgium and of the north of France gives 27 to 32 per cent. of fibrous matter, of which 20 per cent. consists of long fibers and 10 to 12 per cent. of rough residuum, which being worked over gives 50 to 60 per cent. of material which can be spun.

* Printed in Consular Reports, No. 60, January, 1886, p. 81.

Thus of the 32 per cent. of fibrous matter contained in the flax, but 26 or 27 kilograms of useful fiber can be obtained; it follows that 100 kilograms of flax rotted in running water well treated will yield only 20 kilograms of stripped flax, and 6 to 7 kilograms of inferior for spinning. Out of this 27 kilograms a portion of short fiber is of little value, and cannot be compared to the long fibers. A part, therefore, of the fibers have not been at all detached from the stalk.

The Cardon machine gives no waste, so to speak; the fibers, perfectly separated from the stalk, preserve their parallel position throughout their entire length. There is an indisputable gain, since the same flax, which by the ordinary system yields but 20 per cent. of long and 6 per cent. of short fibers, produces by the Cardon system 30 per cent. of long and 20 per cent. of short fibers. Gain in long fibers by the Cardon system, 10 kilograms on each 100 kilograms of rotted flax.

From 500 to 600 kilograms of rotted flax can be worked in 11 hours by a single machine.

This machine makes a great saving in hand labor. For the management of a pair of machines three men are required. A man at the head of the first machine squeezes the straw into the presses and places them in the machine; a man at the end of the first machine, who frees the presses from the flax after its first carding, and returns the flax, with changed ends, so that the part not worked can be presented to the second machine; and another at the end of the second machine to receive the presses, which contain only finished flax, of full length, and finished throughout ready for the spinner. A fourth man to remove short flax and clean the machine might be profitably employed to attend upon each pair of machines.

Taking 500 kilograms of rotted flax as the work of one machine in a day of 11 hours, at 30 per cent. product in long fiber, and 2 per cent. in short, gives a return of 140 kilograms of long and 10 kilograms of short flax.

Ordinary systems in the hands of skilled workmen yield only 20 kilograms per 100 kilograms, and would therefore require 150 kilograms of stalks to produce the same amount; therefore 750 kilograms must be worked by hand to obtain the net result of a day's labor of the Cardon machine, using its 500 kilograms.

In other words, to produce 150 kilograms of stripped flax, it would require $7\frac{1}{2}$ days' labor, if each laborer worked out 100 kilograms of rotted stalks. Besides, this flax must be subjected to a crushing process requiring 4 hours' work of 4 persons, say, in all $1\frac{1}{2}$ days' labor.

Again, the difference appears thus: 150 kilograms of stripped flax, by the ordinary system, require (a) 750 kilograms of rotted flax; (b) $1\frac{1}{2}$ days of breaking; (c) $7\frac{1}{2}$ days' of stripping, 1 man.

By the Cardon system, to produce same result of 150 kilograms, it would require (a) 500 kilograms of rotted flax (passed twice over a single machine); (b) two days' labor, 1 man.

Since the service of each machine requires only 2 men, suppose that on an average the flax costs 24 francs per 100 kilograms, and that the workmen are paid 3 francs per day, we have, old system:

	Franks.
750 kilograms rotted flax, at 24 francs per 100 kilograms.....	180
Labor, 9 men, at 3 francs	27
	207
Less 6 per cent. of short fiber.....	18
	189

Or 45 kilos at 40 francs per 100 kilos. One hundred kilos of stripped flax would cost 126 francs. The following is the cost per the Cardon system:

	Francs.
500 kilograms rotted flax at 24 francs per 100 kilograms	120
Hand labor, 2 men, at 3 francs	6
	126
Less 10 kilograms of inferior, at 30 francs per 100	3
150 kilograms of stripped flax would cost	123
Or 82 francs per 100 kilograms.	

On one side we have the same staple costing 126 francs which cost 82 francs, a difference of about 35 per cent. in favor of the Cardon system. Other expenses, common to and identical in both systems, have not been brought into the calculation.

The Society for the Advancement of National Industry, at Paris, and Industrial Society of the North, both accorded to M. Cardon gold medals for this stripping and carding machine. M. Cardon is associated with M. Dujardin, of Lille, in the management of the patents and the manufacture of machines, which are rapidly turned out at the extensive machine shops of the latter.

The patent rights for England, Belgium, Austria, and Germany have been disposed of. M. Dujardin has sold more than 300 of these machines, and the expectations aroused by the first trial seem to have been realized in the later practical results. The house has not expressed a desire to export machines, being occupied with home orders. The complete stripping and carding machine costs 12,500 francs.

I herewith inclose specimens of flax worked by the machine, labeled with the district in which they were raised; also, a specimen of flax rotted by the process Parsy, above described.

These specimens are flax from the neighborhood of Pérenchies, Hazon, Frise, and Wavrin; flax from Holland and Belgium; flax from the neighborhood of Lys; flax from Wallons and Bergnes; flax from Pays, neighborhood of Pérenchies, process Parsy.

THE "GAVELLE" STRIPPING AND CARDING MACHINE.

In the machine "Gavelle," the presses filled with unstripped flax are confined in slide bars, moving up and down; they encounter in this passage four distinct agents.

(1) Four pairs of crushing cylinders. These cylinders are armed with iron blades; the blades of one cylinder penetrate the empty space of the opposite cylinder and carry the straw there. These cylinders are impelled by a reciprocal movement, in a reverse direction, in such a manner as to follow the up and down movement without injury to the fiber.

(2) The straw being crushed by the cylinders is drawn by a sort of wooden jaws, made of two long slats, underneath which two other slats strike the flax by a horizontal movement, which produces a friction analogous to that which flax-buyers make with their fingers in testing the quality of the straw.

(3) A double mill, with wavy slats, which liberates the straw still adhering to the fiber.

(4) Finally 4 sets of cards, graduated to the state of fineness desired, and arranged as in ordinary machines.

The machine of M. Gavelle differs from that of M. Cardon in that the former crushes the straw, which the latter pricks in order to detach the fiber.

Both employ a mill to separate the adhering straw. M. Gavelle claims that he divides the flax less, and economizes and preserves the fiber, and while thoroughly cleansing it, gives it the appearance of hand-dressed flax.

These inventions seem peculiarly adapted to assist the farmer, who could clean up and card his crop at home. It is desirable for this purpose that more simple and less costly machines, working on these principles and moved by cheap locomotives, should replace the scutching machines now in use.

The necessity for such a class of machines has led to the study of their construction, which will doubtless soon be accomplished.

CHAS. P. WILLIAMS,

Consul.

ROUEN, FRANCE, July 22, 1886.

UTILIZATION OF THE WASTE OF WOOL.

REPORT OF CONSUL WILLIAMS, OF ROUEN.

QUALITIES OF WOOL.

In examining the subject of the utilization of the grease of wool, it seems proper to note the character of the wool of different countries, and to ascertain their peculiar characteristics.

We find that Spain furnished the best wool in the world, in its palmy days, and has descended to the third place in the category, but is looking up.

Saxony and Silesia originally obtained their stock from Spain, and furnished the best.

Australia produces wool superior to French, not so fine as Saxony and Silesia.

France has fine flocks, especially Champagne, de Brie, Artois, Normandy, Picard, and Nord. The native wools of the south are not much cared for.

Russia has great varieties, and formerly Poland and Silesia produced fleeces resembling goat-skins, very fine and heavy.

Algeria, which under Roman rule produced good wool, sends a fair quality, but mixed with thistles, dirt, and sand. The provinces of Algeria furnishing the most wool are Constantine, sufficiently fine, but filled with thistles; the province of Oran, less fine, fewer thistles, more sand, and dry; Tiencen and Mostaganem. All these wools are heavy.

The wools of Morocco resemble those of Algeria, are less esteemed, dry, and scabby.

Turkey is not in advance of Morocco.

Tunis produces the best quality of wool.

In South America, Buenos Ayres produces fine wool, charged with thistles, and furnishes the bulk of exported wool. These arrive *en suint* (unwashed).

England has good wool, a little coarse, very strong. The English obtain their fine wools from Australia.

Holland has nearly the same wool as England.

The different kinds of wool are so variable, and differ so much from year to year that it is difficult to arrive at the precise value of each. All of the African, Turkish, and a part of the French wools are sold unwashed. The wool badly washed can be distinguished by passing the hand over it—it will be pitchy, the fibers will stick together and distinctly show a quantity of “suint” not dissolved.

However carefully wool may be packed, it is yet mixed with foreign bodies, such as burrs and crooked straws. These are found in the French and Algerian wools. On close examination of these small globes, one sees that they are armed with pointed hooks, and that they unroll in spirals. They are found mixed with the wools as follows:

French wool.—Straw of small oats, small quantity; various small straws, considerable quantity; dry herbs, large quantity; burrs—none in some; trace in other qualities.

Silesian.—Straw and herbs, small quantity; burrs, great quantity; sand, great quantity. These impurities are found between the neck and back, and might be obviated by establishing a rack on the top of the sheep's head, to prevent the straw falling upon his neck.

Classification of wool according to cleanness: (1) English wool, (2) German, (3) French, (4) Australian, (5) Spanish, (6) Morocco, (7) Algerian, (8) Turkish, and (9) Buenos Ayres.

English wool is divided into three classes: (1) Long wool, (2) demi-long, and (3) fine. There is but little of the last. These are all clean.

German wool, three classes, all slightly mixed with herbs: (1) Fine, (2) demi-long, and (3) average.

Spain, two classes: (1) Fine, (2) one-half fine, with more extraneous matter than the French.

Morocco, two classes: (1) Demi-long and (2) average, containing sand, dust, and nettles.

Algerian, two classes: (1) Average and (2) demi-long, more or less charged, according to provinces. Oran has less sand and dust than Constantine. The thistles in this variety are round, and unroll themselves spirally, and twist among the fibers. The large quantity of thistles in wool is attributed to careless tending and the abundance of brush, but atmospheric influences also assist—the rains promote their growth; while the sand is attributed to the desert winds, which cause the dust “and other impurities” to lodge in the fleece, and identify themselves with the “suint.”

The Turkish and Egyptian are divided into two classes: (1) Long and coarse wools, and (2) average. They are charged with grease, straw, herbs, and thistles; these last are of enormous size, shaped like an olive—some of the diameter of quail's eggs.

Buenos Ayres wool is divided into three classes: (1) Wool of average length, (2) half fine, and (3) fine. They are very dirty with herbs and thistles, sometimes containing 12 to 20 per cent. of thistles, spherical and slightly flattened. They are not extracted so easily as those of the continent.

The La Plata wools are generally fine, whitish gray, but not clean.

CLEANSING WOOL.

However simple the operations of the purification of wool may seem, they rank among the most delicate of the manufacturer, and require special care and great experience. The constituent parts of these impurities vary with the character, origin, quality, age, time that the wool has been stored, &c.

The discovery of the chemical composition of the material to be cleansed, as well as of the pure material, affords an insight to many economic principles in woolen manufacture.

While a part of the grease which penetrates and pervades the wool can be removed by the action of water alone, the rest requires the use of alkaline solutions at a certain temperature.

It has been demonstrated that the grease of wool contains in its soluble part carbonate of potash, chloride of potash, phocenate of potash, another salt of potash, of which the acid is volatile and slightly odorous, an organic matter containing nitrogen and sulphur, and lastly soapy salts, with a basis of potash, called stearine, and *elierce* (oil of wool), besides an ammoniacal salt.

The part of the greasiness of sheep's wool insoluble in cold water is earthy; a portion of this falls to the bottom, and a portion is held in suspension in the water. This material contains the earth which was attached to the fleece, composed of nitrogen and sulphur, and a small portion of stearine and *elierce* in the cool state. Treated with alcohol the wool loses all of its greasy nature, but to make it perfectly pure it must be passed through chlorohydric acid. This acid takes from the wool only very little inorganic matter, when it has been stripped from all earthy matter coming from the wool grease. In order to have it pure it must be rinsed in water to remove the chlorohydric acid, then dried and treated with alcohol, which dissolves a little of the greasy matter; again washed with water to remove the traces of alcohol, and after this treatment the wool may be considered pure.

This wool nevertheless still contains trace of sulphur. This sulphur is not directly combined with the wool, but constitutes an elementary part of an organic composition which is united to it.

This sulphur can be separated from the wool by soaking in a limevat from thirty to forty hours, treating it alternately with chlorohydric acid and water, and repeating this process until the limewater can take up no more sulphur. Thus the greater part of the sulphur can be separated, and even when this process has been repeated twenty-eight times no damage is done the fibrous texture of the wool, and a slight diminution of tenacity is only observable. The sulphur therefore would not seem to be an element of the wool, but of another principle with which it is united.

This treatment involves much cost for material and labor.

The foreign matter contained in wool has been found to consist of the following:

Waste	9.15
Fatty substance.....	32.60
Organic substances with and without nitrogen.....	43.05
Oxide of iron	2.20
Phosphates of magnesia.....	Trace.
Sulphate of lime.....	.80
Carbonate of lime.....	1.46
Alkaline chlorides.....	.08
Flint, sand, and debris.....	10.66

Nitrogen per 100 kilograms, 3.12.

UTILIZING THE WASTE PRODUCTS.

This result indicates the possession of much grease and nitrogen. This has aroused the attention of chemists, for much more grease is contained in this wool than is contained in many seeds and oleaginous grains which are extensively worked for their oily extracts. If this

could be made into soap, or, after suitable cleansing, into material to serve anew for washing wool and tissues, the remainder, if separated, would be a source of large profit.

This nitrogen could be advantageously used in agriculture, either in its normal condition or added to the manure heap, or mixed with phosphate of lime or guano, or as the foundation of prepared manure. Although the above is theoretically true, practically very little of this waste is thus utilized.

Various attempts have been made from the earliest periods to utilize this waste to the greatest advantage. The attempt to make soap has been continuous. The process consisted in washing the wool to release the waste, and then dissolving it in boiling caustic soda, but the soap wanted purity. The disagreeable animal odor yielded to exposure to air and water, but there remained a soap which when applied to cleansing wool and tissues would stain or tarnish them. It has also been tried for making gas for lighting purposes, but it has not proved advantageous, the wool coming from the process being imperfectly cleaned. Another difficulty can be appreciated by considering that it contains a large percentage of water.

EXTRACTING SUINT.

Without entering into fuller detail on this subject of extracting the "suint" (grease of wool), it is sufficient to say that the experiments to utilize this grease have so generally proved unsuccessful that at Elbeuf we find the most extensive chemical works, to which the manufacturers send their wool to be cleansed and their cloth afterwards to be washed and dyed, use a warm bath, in which are placed 5 to 6 kilograms of sub-carbonate of soda to 60 or 70 liters of water, slightly heated.

The wool, mechanically agitated in these baths for from fifteen to twenty minutes, after passing through rollers, is carried to a cold bath of pure water, in which it is again agitated, passing through rollers to expel the water, comes out purified of its grease. The residuum contained in the bath is of so little value that it is suffered to pass into the stream. This establishment has several springs of clear, cool water upon its premises, which greatly facilitate not only the cleansing of wool but many of its dyeing operations. The burrs or thistles remaining in the wool are charred or reduced to charcoal by the placing of the wool in heated ovens, which is precipitated after another bath in water or driven off by the united action of blowers and separators. This mode of operating varies with straight and curled wool; the former can be subjected to a treatment which would destroy the character of the latter. In emerging from the bath prepared to remove the foreign elements, and having passed through the pure water, the straight wool can, without inconvenience, be subjected to pressure between cylinders to extract a great part of the water. Such an action upon curled wool would distort the fiber—it cannot be subjected to pressure; on the contrary, it is treated in such a manner as to disengage the masses and separate the fibers. This treatment must be varied on account of other extraneous matter.

There is so little novelty in this mode of treatment that it seems useless to go into further detail.

A manufactory of soap from this "suint" recently existed at Elbeuf, and proved a failure, and its proprietor could not be found, to relate his experience.

At another chemical work at Elbeuf I witnessed a similar treatment of wool, and the charred burrs, as well as the dust and other refuse

arising from the treatment of old and new rags of wool, more or less pure, were sold, but they brought only 5 or 6 francs per 100 kilograms.

SHODDY, OR MUNGO.

The mechanical operations at different stages produced waste of fleece, yarn, and floss, which are worked over again after having been cleansed. Besides these, new and old rags, white and colored fabrics, pure or mixed, having as a basis more or less wool, are made into yarns of different strength, and for use in mixing with new wool, with a view of obtaining certain articles at a low price.

Belgium early obtained the art of utilizing the waste of good material of wool, such as the odds and ends, more or less greasy, resulting from spinning and weaving, and neglected on account of the difficulty of cleaning, impregnated with vegetable, oily matter, such as olive or rape oil, but on the contrary easy to restore when they contain only oleic acid.

England, and London in particular, has had machines since 1813 for the preparation of this material for furniture and harness. It is only, however, since 1840 that the city of Balley, in Yorkshire, began to produce the "renaissance," so called in French, or the making of wool from rags of cloth. The rags are submitted to a machine called "devil," analogous to the opener of woollen-spinning factories. The first of these attempts gave rise to a "devil's dust," which greatly annoyed those living near their factories. It has now become an important article of commerce under the names of shoddy and mungo. The first applies to the products of old rags, the latter to the better waste of yarn, bits of wool, &c. Shoddy implies refuse.

The transformation by fifty machines of 25,000 tons of old rags, which yielded 19,000 tons of this shoddy wool, indicates only slightly the extent of this trade, of which it is difficult to obtain exact statistics.

Prussia, near Aix-la-Chapelle and elsewhere, enjoys with England, France, and Belgium, the benefit of this trade.

There seems to be but little progress made in the treatment of these rags, whether pure or mixed, the foreign elements of the latter being eliminated by sulphuric acid, which leaves the wool intact, while consuming the other textiles.

One large establishment at Rouen, under the management of a Yorkshire man, devotes its whole energy to this manufacture from rags, principally brought from Paris, and sends its entire product to England, whence it is doubtless distributed over the universe, our own country not being forgotten. The dust, clippings, and sweepings of factory are sold to vine-growers at 5 to 6 francs per 100 kilograms.

POTASH.

Some of the wool carders at Roubaix extract potash from the grease of wool, and utilize the balance for a soap for their own use. They employ various processes to effect this, but are so reticent on the subject that neither the process nor the profit could be ascertained.

This potash sells for 39 francs per 100 kilograms, loaded on the wagons. The accompanying is a specimen of a superior quality at 79 francs per 100 kilograms. The manufacture of potash from grease of wool has been more or less in vogue for many years. No apology is needed for introducing here a translation of the very able paper of M. Rohart upon this subject, which was recently read before a meeting of

the French National Agricultural Society, presided over by the venerable M. Chevreul, himself distinguished for his researches in the chemical analysis of wool and its waste:

This grease of wool, despite numerous and praiseworthy attempts, is not practically used, and serves little or no other purpose than to poison the streams. This question is not of yesterday, but every day becomes more imposing from the two points of general health and industrial economy.

It is more than fifty years since M. Chevreul discovered the elementary composition of grease of wool. Since these early researches, this question of the grease of wool has singularly developed. Our wool production is to-day about 100,000,000 of kilograms ($2\frac{1}{2}$ pounds) in an average year, but in consequence of the extension of material prosperity the consumption of fabrics of wool has doubled, and for a length of time France has been obliged to import from South America a nearly equal amount of wool. Thus about 200,000,000 kilograms are annually handled, the waste upon which is about 50 per cent., and the greater part of this consists of the grease of wool.

SUINT AND SOAP.

The attempt has been unsuccessful hitherto to utilize this "suint" to the profitable manufacture of soap, of which the annual production is from 250,000,000 to 300,000,000 kilograms, and many of our wise colleagues could bear witness to the failure of all attempts in this direction. Indeed the "suint" has been considered always as normally unfitted for soap. This is so true that for want of other use it has been reduced to ashes to obtain a value of 5 to 6 francs per 100 kilograms of "suint." But the discovery of deposits of potash in Germany has rendered this process impossible from an economical point of view, and for a long time the "suint" finds but little other outlet than in the rivers surrounding the industrial cities. To cite two examples, it is thus at Rheims and La Vesle, where the fall of water is so slight that the débris are deposited over a great space. At this point, as well as in various other places, an oar can be pushed down to the level of the water in the deposits of this waste and remain perpendicular. In the warm season great quantities of infectious gases and miasmas for the neighborhood prevail.

At Roubaix and Tourcoing the deposits in the Espierre, which has its outlet in Belgium, have given rise to such numerous and legitimate claims on the part of the inhabitants of the north that the Belgian Government has threatened to dam the river, at the risk of inundating many factories on the frontier. Great effort is now being made to purify these insalubrious waters.

The question is to be otherwise solved, and let us proceed to the proof.

The "suint" can be rendered into soap by means of a simple change in its elementary constitution, with an unexpected facility readily appreciable.

Thus: The "suint," brought simply to its point of fusion, absorbs certain composites of sulphur with surprising ease, to the extent of retaining in a fixed state one hundred times its volume of sulphureted hydrogen.

It should be borne in mind that after the operation the sulphur becomes an integral part of the substance, which thus, like all other fatty substances, develops new properties which can be treated entirely different from the former capability, and from which entirely different results can be obtained. It is by virtue of this reaction that the "suint" becomes immediately and entirely soapy in a cold state.

In proof of this assertion the author produces a cake of soap which has been obtained in the above-described manner, and that it is not a sample for the laboratory, but a commercial product, made at the extensive soap-factory of Messrs. Michaud Brothers, of Aubervilliers.

We do not find there either the odor *sui generis* of "suint" nor the odor of sulphureted hydrogen. Then there has been a very close combination between the principal constituents of the material. That which further demonstrates it is that the stream of soap thus obtained was, for example, at a temperature 30° to 40° centigrade at its entrance into the vats; it rapidly rises to 60° or 70° in the space of a few hours. Practically this result is obtained more surely than "*la mayonnaise*" of the housewife, which it recalls in a striking manner.

This mixture is fine and of perfect homogeneity. The operation is complete in less than an hour, while the ordinary preparation of soap based on soda takes from six to eight days. If there be placed one above another two vertical troughs mechanically charged with this mixture, one could obtain, without appreciable expense of fuel and hand labor, a continual manufacture, capable of producing readily 50,000 kilograms of soap per day. Thus the cost is sensibly decreased.

This undoubtedly is not toilet soap, and its origin indicates that it would not have a softening effect upon the skin. It is essentially a cheap soap, in view of the use to which it is suitable.

But I cannot dispense with noticing that henceforth there is here a new and unexpected chemical action, of real interest, although contrary to previous knowledge of soap-making from fatty matters—this can be completely obtained, not with caustic alkalies, but with carbonated alkalies, and this upon all fatty substances.

I repeat that this is a scientific fact, entirely new, not confined to such fats formerly transformed to acid fats, but a general result, applicable to all substances of a soapy nature—for instance, "suint," which has always been considered incapable of producing soap, even when subjected to caustic alkalies.

That which is certain and entirely new is that in the presence of fatty substances, first suitably sulphureted, the solutions of alkaline carbonates are immediately decomposed in a cold state; the carbonic acid liberates itself so abundantly that the mass rises to the point of extravasation, if the receptacle which is used is not deep enough, and finally is obtained clearly defined soap, as you have the proof.

This is then truly only a simple phenomenon of substitution, an atomical change, which reveals the force of the affinity of the alkalies for the sulphur, and we have another proof in that the carbonic acid is expelled from the combinations which it forms with the potash or the soda.

This unexpected discovery is important in the interest of the different solutions of the question.

In the ordinary course of chemical products employed in the trade the alkalimetric unit of caustic soda is 0.46 centime, while the same unit taken in the carbonate of dry soda is only 0.29 centime, whence a difference of 17 out of 46 is equal to 58.50 per cent. at least.

This is an important difference, for the soda used in soap-making amounts to considerable, and for Marseilles alone is computed by millions of kilograms.

This deduction of cost of nearly 60 per cent. seriously affects industrial and household economy, for this result applies equally well to the carbonates of potash as to those of soda, and in that which concerns the first it is unquestionably practicable to use directly in the manufacture of soft soaps the salts of beets, without subjecting them to the expense of refining before they can be used, also avoiding the intermediary conditions and combinations.

I affirm that whatever may be the nature of the alkaline carbonates used, the decarbonization is always effectual; and indeed, after the completion of the reaction in the vats, any quantity whatsoever of the soapy solution is decomposed by a weak acid, not the least issue of carbonic acid is observable, which proves that it has been totally expelled, and that henceforth the combinations are complete.

In fine, it is true of a sulphureted soap, the sulphurization can be urged to its maximum, if, instead of reducing into soap, by the aid of a carbonaceous or caustic alkali, a sulphohydrate of sulphur, of potash, or soda is used.

USES OF THE SOAP.

Thus a mass of soap has been produced; nevertheless the odor would not indicate its origin nor its composition, although the quantity of fixed sulphur is truly considerable.

This is the remarkable point to which, in connection with agricultural interests, particular attention is called, because there are so many important services which it can render to agriculture, vine culture, and horticulture, as defensive weapons against their numerous small enemies and their destructive influence.

All of the branches of human activity are incessantly preyed upon by the attacks of insects, with whom the struggle is incessant to obtain the fruits due to labor and toil. Vine-growing affords a sad example, while it is remarkable that sulphur and its products prevail most certainly against these insects, the numerous broods of cryptogames, and other sickly parasites of vegetables and animals. I shall prove this, and for that reason I call to mind that sulphurous acid acts most surely against the itch in man and horse, and also in numerous other cutaneous diseases.

The blight of the vine is equally overcome by sulphur, as is the phylloxera by sulphur and a combination of carbon. And now, at last, the experienced vine-grower boldly confronts the peronospera and the anthraxnosa armed with various composts of which sulphur is the principal ingredient. The action of the composts of sulphur is thus well established, but in many of the practical applications much inconvenience arises from the dispersion of the sulphurous powder from the effects of storms and high winds. If saline solutions are applied in the form of vapor, as is the recent practice against the new diseases of the vine, the rain washes the leaves and compromises the success of the operation.

It is probable that soapy solutions endowed with greater glutinous properties will be more adhesive. It will be borne in mind that soap applied to the finest and most delicate skin is so retained that a prolonged rinsing in pure water, as well as much rubbing with dry towels, are required to completely remove the soap. At all events, there is no doubt that the sprinkling of soapy waters in a misty state upon vines will

be less prejudicial to the health of the workmen employed than that of mineral solutions. In an economic point of view there would be great saving.

Without going back too far, it will be remembered that cryptogamic diseases have imperiled the crop of beets and potatoes, without taking into account the daily ravages which are caused every year by the aphid and other verminous insects, against which the defense is inadequate. In all of these invasions there is generally a collection and even entanglement of fine thread, having, at the place of juncture, the appearance of a padded tissue. In this case the solutions of sulphureted soap would have great efficacy, and with liberal application would do good work; and there is reason to hope that in this manner the winter egg of the phylloxera could be destroyed. Doubtless these are simply hopes, for none of these have as yet been experimentally realized, but at least these hopes are logical, and have the sanction and authority of numerous facts to justify them.

Finally, another application of not less interest than the preceding suggests itself. Permit me to recall to your minds that your illustrious colleague, M. Pasteur, has forcibly urged the necessity of disinfecting the linen, clothes, and bedding of cholera patients and those afflicted with typhoid and other contagious fevers, as a preventive to epidemic contagions.

In fact, and in proof of the aid thus afforded in the south of France during the cholera invasion of 1884, notably in the Drôme, at Arpahan and the Omergues, separated by a small stream of water used for alimentary purposes by the inhabitants, in which the clothes of some emigrants from Toulon and Marseilles had been washed, the cholera broke out at the same time in these two places.

Prudence is always reasonable, and the same reasons are as plausible in that which applies to the linen and material of hospitals, barracks, and prisons as everywhere else that the accumulation of men requires especial hygienic precautions.

I believe that no experienced chemist disputes the action of sulphureted composts as a means of purification and prevention in any case which I have mentioned. Besides, I could cite, in demonstration, the increasing use made of sulphureted flannels; and in this respect a soap such as described, at a cheap price, would be preferable. I am able to add that the different experiments practically made and often repeated in particular households as well as public lavatories have proved entirely satisfactory. I unreservedly affirm that the fact is that these simple preparations have the same effects as domestic lyes, with an absolute freedom from odor of grease of wool or sulphur.

Thus we have seen at the beginning of this research that we have an abundance of material definitely unemployed, perilous to the hygiene of the streams of water and the general health.

After a careful investigation we find new properties and applications, and a value given to those which formerly possessed none. At the same time a new scientific result is produced, directly interesting industrial and domestic economy, and a protection to agriculture, vine culture, and horticulture, without omitting the important bearing upon the general hygiene in cases of contagious epidemics, as well as its usefulness for hospital and other institutions. I can add that everything here adduced is founded upon reliable facts, and not upon simple theories or purely mental conceptions.

CHARLES P. WILLIAMS,
Consul.

UNITED STATES CONSULATE,
Rouen, July 5, 1886.

PORCELAIN PAINTINGS AND THE TARIFF.

REPORT OF CONSUL BISCHOFF, OF SONNEBERG.

That portion of our President's recent message which recommended the "abolishing of the discrimination made by our tariff laws in favor of the works of American artists" as against those of foreign artists was read with interest and pleasure in the art circles of Europe. The recent petitions from American artists residing in Rome and Paris, earnestly and nobly urging this same point, but served to deepen the interests of Europeans in the matter. In consequence of this, I received a few weeks since from certain gentlemen residing in Lauscha, Thuringia-

gia, and engaged in "*porzellan malerei*," an earnest invitation to visit their establishment, with a view to the inspection of their productions as claiming to be works of art.

These gentlemen are engaged, not in decorating or ornamenting porcelain or china wares, vases, statuettes, &c., but simply in the production of painting, rendered permanent by burning, upon porcelain plaques or surfaces. Of this I satisfied myself by a personal inspection of their studios, methods, and productions. They claim, therefore, that their productions, though on porcelain surfaces, should be classed, not as ornamented china or plaques, but as in themselves works of art.

According, however, to the present tariff laws of our country, these productions are classified as decorated china wares, and as such are subject to 60 per cent. duty. This enormous duty, these gentlemen claim, had virtually stopped the sale of their productions in the United States. Under the former duty of 30 per cent. there had been a fair export, but this had ceased when the tariff was raised.

In order to do these gentlemen justice, and at the same time to place the matter in full light before our Government, I prepared the following series of questions upon the subject in hand, and submitted them to the parties interested, viz, Messrs. Ens & Greiner, and Mr. Julius Greiner Sohn, in Lauscha, Thuringia:

(1) What was the average yearly amount of your exportations to the United States under a duty of 30 per cent.?—Messrs. Ens & Greiner answer, 40,000 marks, or about \$9,500; Mr. Julius Greiner Sohn, 25,000 to 30,000 marks, or about \$5,900 to \$7,100.

(2) What is the average amount of your present exportation per annum, since the tariff was raised to 60 per cent.?—Messrs. Ens & Greiner answer, scarcely 1,000 marks, or about \$240; Mr. Julius Greiner Sohn, about 3,000 marks, or about \$700.

(3) What in your opinion is the chief cause of this decline?—Messrs. Ens & Greiner answer: "In our conviction the high tariff is the only cause of this decline in our exports; for our customers themselves assured us that the cost of transit and duty amounted to over 75 per cent., on account of which the paintings were so extremely high they could not be sold." Mr. Julius Greiner Sohn to the same effect.

(4) What is the ratio of your present prices to those that prevailed when your business with the United States was in its most prosperous condition?—Answer from both parties: The prices for fine paintings have maintained their position; by greater attention, however, the paintings are made even more finely now than formerly.

(5) What materials are used in the productions of your art? and state the cost of the same.—Answer. The only articles needed are porcelain plaques, paints, oils, and brushes. The cost of these is only a mere trifle. For example, for a painting valued at 120 marks (about \$30) the cost of the materials is but 4½ marks, or a little over one dollar.

(6) How often is each piece painted and burnt?—Answer. At least three, sometimes five, times, according to the nature and combinations of the colors employed, each piece being burnt as many times as painted.

(7) What are the ordinary sizes of these plaques? State length and width.—Answer. The sizes now most in demand are: No. 311, 17½ by 12 centimeters; No. 324, 21½ by 14½ centimeters; No. 308, 25 by 18 centimeters, and size 32 by 18. There are also oval or elliptical shapes, used for portrait paintings. The thickness of the plaques is from 4 to 7 millimeters.

(8) State the schedule of your prices, and the times required for the production of various specimen pieces.—Answer. The prices for these

paintings* are as follows: No. 311, 50 marks (\$12); No. 324, 60 marks (\$15); No. 308, 100 marks (\$25); size 32 by 18, 150 marks (\$37.50). Of course intermediate and larger sizes are produced, the latter being valued as high as 600 marks, or about \$150.

(9) Are there not smaller and cheaper paintings produced and sold by members of your profession?—Answer. There are small pieces of painted porcelain, such as brooches, sleeve-buttons, pipe and mug heads, &c., produced, and in large quantities put upon the market at small figures, but these are a "house industry," or the practice pieces of embryo artists. A genuine artist cannot and would *not* produce such wares. But, as in every other department of art, there are always imitators and those willing to cater to the demands of inferior taste. In our opinion and judgment no porcelain painting can be classed as a work of art which can be sold for less than 50 marks or \$12.

(10) What method of training is necessary for the artist in your profession?—Answer. Before an artist can produce anything worthy of the name of art he must receive instruction in drawing from five to six years, and after that he must give at least two or three years to the study of colors. Above all, genuine talent and persevering diligence are required, without which no man can become a successful artist. Mr. Julius Greiner Sohn states that in preparation for his profession he spent three years in the city of Coburg and three in Heidelberg, working in the studios of professional artists and receiving instructions from them.

(11) What evidences can you produce, such as diplomas or medals gained at expositions, letters of commendation from known artists, &c., to show that your productions are looked upon as works of art?—Messrs. Ens & Greiner answer: As an acknowledgment of the high merits of our productions, we have received two medals from his highness Duke Bernhard Erich Freund, of Meiningen, a diploma of honor in the exposition of arts held in Weimar in 1860, another in the World's Exposition of Vienna, 1873, a medal in the World Exposition of Sydney, 1880, and the second prize in Melbourne in 1881.

Mr. Julius Greiner Sohn received the first prize in the Melbourne Exposition of 1881, and refers as to the estimation in which his work is held to the following acknowledged artists, viz, Prof. Paul Thumann, portrait painter of Berlin, and Prof. Franz Defregger, of Munich:

SPECIMENS OF WORK.

In their communications with me, these gentlemen, in substance, further said: "Knowing that mere statements are not always sufficient to substantiate claims, and willing to let our productions speak for themselves, and stand or fall upon their own merits, we desire to transmit to your Government specimens of our work, asking that the same may be submitted for inspection to those who have in their hands the legislation on this subject, and inviting also the examination and opinion of the recognized artists of your capital. We desire only a candid consideration of our claims, and are willing to abide by the results."

Accordingly, I received at their hands the two specimens transmitted, with this statement: The one entitled "A Noble Lady in the Attire of the Sixteenth Century" is sent by Messrs. Ens & Greiner, and is valued in their studio at 100 marks, or \$25; the other, entitled "Das Mährchen" (The Myth), and sent by Mr. Julius Greiner Sohn, is a copy of the famous picture by Professor Graef, of Berlin, and is valued at 125 marks, or \$31.

The gentlemen further request me to say that when these pictures have served the ends for which they are sent, and have been submitted to the proper legislative authorities, they desire that they shall be returned to the honorable Secretary of State and placed at his disposal.

* Deposited in the National Museum at Washington.

CHROMO PICTURES.

In conclusion I may add that the gentlemen called my attention to what seemed to them the unjust advantage over themselves which is given by our present tariff laws to the manufacturers of "chromo pictures."

Chromos, which are made by machinery and sold by the thousand at very low prices, require for their production, outside of the man who makes the original stone cutting, no artistic skill, no years of patient study and training, but simply the intelligent mechanic. And yet chromos are subjected to a duty of but 25 per cent., while a porcelain painting, worth often as much as 100 chromos—the work of days and weeks together and the product of trained and persevering talent—is made to pay 60 per cent., or more than twice as much as the chromo.

It cannot be denied that such reasoning is worthy of consideration on the part of a Government which proposes to do justice to all men with whom it has to deal.

I beg also to add that, so far as I can learn, there are comparatively few establishments for the production of porcelain paintings in Germany. Beside the two at Lauscha above referred to, one at Bamberg (Kingdom of Bavaria), and possibly several in Bohemia, I do not know of the existence of others.

OSCAR BISCHOFF.

UNITED STATES CONSULATE,
Sonneburg, February 24, 1886.

Consul.

EXPERIMENTS IN ENSILAGE.

REPORT OF CONSUL LATHROP, OF BRISTOL.

The Bath and West of England Agricultural Society decided in 1885 through its executive committee that there should be carried on in connection with its show at Bristol in 1886 an exhaustive series of experiments in reference to ensilage. The subcommittee appointed to carry out the experiments comprised practical and scientific agriculturists and able scientific men, nearly all of whom were already familiar with the subject. The result of their experiments is the most valuable and precise addition to our knowledge that has yet been made, and I present the salient points of their report. Much of what follows is copied verbatim.

After consultation with Sir John B. Lawes, Bart., Dr. J. H. Gilbert, Mr. H. M. Jenkins, of the Royal Agricultural Society of England, and Mr. George Fry, of Cobham, Surrey, the subcommittee decided that about 5 tons of hay, and about 7½ tons of sour ensilage, and about 7½ tons of sweet ensilage should be made. The sour and sweet ensilage to be made in lots of about 2½ tons each, and each lot in a separate silo.

Sufficient old pasture land was rented from Mr. Stephen Harding, at Bower Ashton, near Bristol, together with the use of a barn in which the six silos could be housed until after the close of the show of the Bath and West of England Society on Clifton Down, in June, 1886.

GRASSES, USED FOR EXPERIMENTING.

An inspection of the field showed that the crop was well suited for experimental purposes, for though the land was undulating, the average

growth and quality of the grass was fairly even, and the same varieties were found throughout. By the time the experiments were commenced the grasses were well in bloom, and the clovers and general herbage were also in good condition, the white clover being the only variety not fully out. On examination the varieties of grass, herbage, and weeds found were as follows:

GRASSES.

No.	Botanical name.	English name.	Quantity.
1	<i>Alopecurus pratensis</i>	Foxtail	Rather rare.
2	<i>Festuca pratensis</i>	Meadow fescue	Very rare.
3	<i>Dactylis glomerata</i>	Cocksfoot	Common.
4	<i>Lolium perenne</i>	Perennial ryegrass	Common.
5	<i>Cynosurus cristatus</i>	Crested dogstail	Very common.
6	<i>Anthoxanthum Odoratum</i>	Sweet-scented vernal	Rather rare.
7	<i>Festuca avena</i>	Sheep's fescue	Very rare.
8	<i>Lolium Italicum</i>	Italian ryegrass	Very rare.
9	<i>Avena flavescens</i>	Golden oat grass	Very common.
10	<i>Avena pubescens</i>	Hairy oat grass	Very common.
11	<i>Holcus lanatus</i>	Yorkshire-fog	Very common.
12	<i>Holcus avenaceus</i>	Tall oat-like grass	Rather common.
13	<i>Holcus mollis</i>	Creeping rooted soft grass	Rather common.
14	<i>Bromus giganteus</i>	Brome grass	Common.
15	<i>Triticum repens</i>	Twitch	Common.
16	<i>Briza media</i>	Quaking grass	Very rare.

LEGUMINOUS PLANTS.

17	<i>Trifolium perenne</i>	Broad red clover	} Very common and general throughout the field.
18	<i>Trifolium repens</i>	White clover	
19	<i>Lathyrus pratensis</i>	Meadow vetchling	Rather common.
20	<i>Vicia sepium</i>	Bush vetch	Rare.
21	<i>Medicago lupulina</i>	Nonsuch	Rare.
22	<i>Lotus corniculatus</i>	Common birdsfoot clover	Rather common.

MISCELLANEOUS HERBAGE AND WEEDS.

23	<i>Achillea millefolium</i>	Yarrow	Rather rare.
24	<i>Plantago lanceolata</i>	Ribwort plantain	Common.
25	<i>Plantago major</i>	Greater plantain	Rather common.
26	<i>Lapsana communis</i>	Common nipplewort	Common.
27	<i>Leonodon taraxacum</i>	Common dandelion	Rather rare.
28	<i>Tragopogon pratensis</i>	Yellow goat's beard	Rare.
29	<i>Cnicus arvensis</i>	Creeping plume thistle	Rather rare.
30	<i>Gymnadinia conopsea</i>	Sweet-scented orchis	Rare.
31	<i>Bellis perennis</i>	Daisy	Common.
32	<i>Crysanthemum leucanthemum</i>	White oxeye	Common.
33	<i>Rumex obtusifolius</i>	Broad leaved dock	Very rare.
34	<i>Rumex acetosella</i>	Sheep's sorrel	Common.
35	<i>Conium maculatum</i>	Hemlock	Very common.
36	<i>Ranunculus bulbosus</i>	Bulbous buttercup	Very common.
37	<i>Ranunculus acris</i>	Meadow crowfoot	Very common.
38	<i>Rhianthus crista-galli</i>	Rattle weed	Common.
39	<i>Cerastium viscosum</i>	Mouse-eared chick weed	Common.
40	<i>Urtica dioica</i>	Great nettle	Very rare.

It will be seen from the above that the better varieties of grass were not well represented, there being scarcely any fescues, no catstail, and but little foxtail. Of cocksfoot there was rather above the average amount. The medium quality grasses were well represented, and the inferior grasses were rather abundant. As they were all well grown they may be considered a useful lot on the whole. The broad and Dutch clovers were very full and in fact covered the whole of the field; they and the other legumes made a very valuable pasture, decidedly better than the average of the immediate neighborhood. Many varieties of weeds were present, but, with the exception of hemlock, not in any serious quantity. A good mixed pasture like this is what is required for experiments of this kind, as it is more representative of the pastures throughout the country than one where but few varieties are found.

When mowing commenced, samples of the grass were taken from each load as carried to the barn, and sent to the chemist of the society, Dr. J. Augustus Voelcker, for analysis. The area of the pasture to be mown was so subdivided that the hay and the contents of each silo should fairly represent the herbage growing over the entire area of pasture mown. The hay was made in the usual manner; and samples of the fresh mown grass were sent for analysis to Dr. Voelcker.

THE SILOS.

Six wooden silos were erected, no expense being spared to make them thoroughly efficient. They were made of three-inch deals, firmly braced with iron rods, and the joints were tongued and treated with a solution by which they were made perfectly water-tight. So effectively was this done that not the slightest leakage took place, even when the grass was subjected to a pressure of 2 cwt. per square foot.

The following tables show various particulars as to the filling of the various silos, and the headings to the tables show the nature of the ensilage that was intended to be made in each silo and the kinds of acids to be expected.

The headings also show what treatment in each case was pursued in order to produce the desired results.

It is interesting to observe, by a comparison with other subsequently given tables, with what almost absolute accuracy the committee were able to predict the character of the product.

TABLES OF SAMPLES, WEIGHTS, ETC., OF SILOS.

SILO No. 1.—Sour ensilage rammed and compressed as rapidly as possible and to be kept down to 50° F. if possible. The only acid present in this expected to be lactic and, perhaps, a little butyric. Filled and covered in one day.

Number of load.	Weight of load.	Sundried sample.	Green sample.	Date.
	Cwt. qrs. lbs.	Oz.	Oz.	
1.....	14 0 7	50		June 26
2.....	15 2 0	50		June 26
3.....	6 0 21	50	14	June 26
1.....	17 2 21	50	14	June 29
4.....	53 1 21	200	28	
Samples.				
Less.....	13			
Total ensiled.....	52 1 8			

	Cwt. qrs. lbs.
Tare of silo.....	18 1 14
Covering boards.....	1 3 6
Total.....	18 1 20

Silo No. 1 was filled on June 26. On the 29th it had sunk 2 feet 5 inches, so it was re-filled. A pressure of 2 cwt. per square foot was applied by means of pig-iron placed upon a double covering of boards. A slight rise in temperature took place after the refilling. The ensilage had again sunk to 2 feet 9 inches on July 17.

SILO No. 2.—Sour ensilage to be kept below 120° F. This should be trodden and compressed as much as would be practicable in a general way. The acids here expected to be lactic and acetic.

COMPOSITION OF SILOS.

Number of load.	Weight of load.	Sundried sample.	Green sample.	Date.
	<i>Cwt. qrs. lbs.</i>	<i>Oz.</i>	<i>Oz.</i>	
1.....	11 8 14	50		July 1
2.....	12 8 7	50	24	July 1
8.....	5 9 14	50		July 1
1.....	11 2 0	50	24	July 4
2.....	7 0 0	50	8	July 9
3.....	2 0 0	50	8	July 13
6.....	50 1 7	300	44	
Samples.....				
Less.....	21			
Total ensiled.....	50 0 14			

	<i>Cwt. qrs. lbs.</i>
Tare of silo.....	16 2 14
Covering boards.....	1 3 5
Total.....	18 1 19

Silo No. 2 was filled on July 1, three loads being taken. It was weighted with 1 cwt. per square foot, and on July 4 had sunk nearly 2 feet. It was refilled on the 9th, having sunk 16 inches, and again on the 13th, having sunk 10 inches. The temperature was fairly even throughout. The shrinkage on July 17 was 1 foot 3 inches from top of silo.

Silo No. 3.—Sweet ensilage made by carting the grass direct to the silo. Treading at the sides but not at the center. Temperature 140° Fahr. to 150° Fahr. Fruity type of sweet ensilage.

No. of load.	Weight of load.	Sundried sample.	Green sample.	Date.
	<i>Cwt. qrs. lbs.</i>	<i>Oz.</i>	<i>Oz.</i>	
1.....	14 2 0	50	14	June 26
1.....	12 3 21	50	18	June 30
2.....	7 3 21	50	24	July 4
3.....	8 3 7	50	24	July 7
4.....	5 0 0	50	24	July 8
5.....	3 0 7	50	8	July 11
6.....	3 0 21	50	8	July 14
7.....	50 1 21	350	120	
Less.....	0 1 1	weight of samples.		
Total ensiled.....	50 0 20			

	<i>Cwt. qrs. lbs.</i>
Tare of silo.....	16 2 14
Covering boards.....	1 2 27
Total.....	18 1 13

Filling was commenced on June 26, and, as on the 30th, it had heated to 146°, a fresh lot was put in; this reached 148° on July 4, so another small load was put in. A small quantity was put in on the 7th, and that quickly heated, so a fresh lot was put on that on the evening of the 8th. The temperature kept high, but rather varied, which was owing to the grass lodging rather between the tubes in which the thermometers were placed; when this was pressed a little the temperature rose to 140°, so another load was ensiled on the 12th: this reached 142° on the evening of the 13th, so another small quantity was put in. This reached 143° on the 16th, and the silo was then covered in and weighted with 1 cwt. per square foot. The ensilage had sunk to 1 foot 5 inches from top of silo on July 17.

Silo No. 4.—Sweet ensilage. Grass allowed to lie one day in the field and then made in the same way as No. 3, aromatic type of sweet ensilage.

Description.	Weight of load.	No. of load.	Sun-dried samples.	Green samples.	Date.
	<i>O. q. lb.</i>		<i>Oz.</i>	<i>Oz.</i>	
Green	20 2 7	1	50	14	June 30
Withered	9 1 7		35	14	July 1
Green	17 0 7	2	50	24	July 3
Withered	7 2 14		35	14	July 4
Green	5 2 14	3	50	24	July 7
Withered	3 0 14		35	14	July 8
Green	6 0 7	4	50	8	July 9
Withered	2 1 0		34	8	July 10
Green	4 2 7	5	50	8	July 10
Withered	3 2 7		50	8	July 11
Total green	52 3 14	less samples, 20 pounds.			
Total withered	25 8 14	less samples, 15 pounds.			
Ensiled withered	25 2 27				

	Cwt. qrs. lbs.
Tare of silo	16 2 14
Covering boards	1 2 19
Total	18 1

The first load for this plot was cut on June 30, and, after lying in the sun for a day, was ensiled on July 1. More than half its weight had evaporated, and it was found that there was not sufficient bulk to reach 140° in its then dried state; so another load was put on the top of it on July 4, but it was not until the 7th that it reached 142°. A fresh load (of course after lying in the field a day) was, therefore, put in, and this reached 149° on the evening of the 8th; and as this was small the temperature was up at 148° again by the 10th, so another small quantity was added, which rapidly rose to 150°, and on the 12th another small lot was put in and this reached 144° on the 14th; so during the day the silo was covered in and lightly weighted to draw the temperature to the top, and was finally weighted with 1 cwt. per square foot on the 16th. The top of the ensilage was 1 foot 8 inches from the top of the silo on July 17, and was then sinking.

SILo No. 5.—Sour ensilage chaffed, the silo filled and at once covered and weighted with 1 cwt. per square foot.

Number of load.	Weight of load.	Sundried samples.	Fresh samples.	Carbolic acid samples.	Date.
	<i>Owt. qrs. lbs.</i>	<i>Oz.</i>	<i>Oz.</i>	<i>Oz.</i>	
1	13 0 14	52	13	6½	June 29
2	20 1 0	80	20	10	June 29
3	17 2 14	70	17½	8½	June 29
4	11 0 7	44	11	5½	July 4
Samples	62 0 7	246	61½	30½	
	21				
Total ensiled	61 3 14				

	Cwt. qrs. lbs.
Tare of silo	16 2 0
Covering boards	1 8 17
Total	18 2 17

The grass for this had to be chaffed; there was a good chaff cutter, worked by horse power, fixed in the barn, which Mr. Harding was kind enough to place at our disposal. As this was under cover, sheltered from both wind and rain, the evaporation during the cutting and putting into the silo, which was only about seven yards away, was reduced to a minimum and of great advantage for an exact experiment. The first filling was begun on June 29, and the silo was well filled and compressed, and at once weighted with 100 weight per square foot. On July 4 it had sunk nearly

TEMPERATURE OF SILOS.

2 feet, so another load was put in, and, though this filled it, it had sunk another 1 foot 8 inches on the 17th; but it was then sinking very slowly.

Silo No. 6.—Sweet ensilage made by carting the grass direct to the silo, chaffing it, treading at the sides, but not in the center. Temperature, 140° Fahr. to 150° Fahr. Fruity type of sweet ensilage. This is the same as silo 3, with the exception that it is chaffed:

Number of load.	Weight of load.	Sundried samples.	Fresh samples.	Carbolic acid samples.	Date.
	<i>Cwt. qrs. lbs.</i>	<i>Oz.</i>	<i>Oz.</i>	<i>Oz.</i>	
1.....	21 0 0	42	21	21	June 30
2.....	5 0 0	10	5	5	July 4
3.....	5 0 0	10	5	2½	July 6
4.....	5 0 0	10	5	2½	July 8
5.....	7 0 0	28	7	3½	July 11
6.....	7 0 14	28	7	3½	July 13
Samples.....	50 0 14 13½	128	50	38	
Total ensiled.....	50 0 0½				

	<i>Tons. cwt. lbs.</i>
Tare of silo.....	16 3 0
Covering boards.....	1 3 7
Total.....	18 2 7

The first load was put into this on June 30. On July 4 146° were recorded, so a small load was put in. This rapidly rose to 148°, so another lot was put in on July 6. This again rose quickly, and a fresh lot was put in on the 8th, which went up to 142° on the 11th, so more was added on the 11th, and on the 13th the last load was put in as the temperature had risen to 150°. This rose to 143° on the 16th, so it was covered and slightly weighted in the morning, and in the evening was fully weighted with 100 weight per square foot. The silo, though it had been well filled previously, was not full on the 17th by 1 foot 11 inches, and was apparently sinking.

TEMPERATURE OF SILOS.

The following table shows the temperature during the days when the silos were being filled, and also the amount of rain that fell each day for ten days previous to commencing the cutting of the grass. Only once during the execution of the experiments did rain fall; the other days were fine and bright.

Shade temperatures taken at 9 a. m.

Date.	Maximum.	Minimum.	Rain.	Remarks.
	°	°		
June 26.....	62	50		Overcast.
June 27.....	63	47		Half cloudy.
June 28.....	66	46		Do.
June 29.....	67	54		Do.
June 30.....	70	55		Do.
July 1.....	66	50		Hazy.
July 2.....	66	51		Do.
July 3.....	68	55		Do.
July 4.....	68	54		Do.
July 5.....	73	55		Half cloudy.
July 6.....	70	54		Do.
July 7.....	66	55		Do.
July 8.....	65	55	0.11	Showery.
July 9.....	66	48		Half cloudy.
July 10.....	66	49		Hazy.
July 11.....	68	53		Cloudy.
July 12.....	71	55		Fine.
July 13.....	71	48		Half cloudy

Rainfall for ten days previous to commencing cutting the grass.

Date.	Rainfall.	Date.	Rainfall.
	<i>Inch.</i>		<i>Inch.</i>
June 17	0.16	June 22	.06
June 18	.0	June 23	.09
June 19	.05	June 24	.29
June 20	.12	June 25	.09
June 21	.0	June 26	.0

RESULTS.

The sampling was commenced on February 26, 1886, and finished on February 27th. In sampling silo 1, a hole a foot square was taken and the contents drawn out by specially-made hooks, but as it was necessary to cut with so much accuracy to effect this, a rather larger hole was made in the others. The samples were taken about 8 inches from the sides of the silos, and it is worthy of note that so well were they built and carefully put together that not a piece of mold was found near the side, a very unusual occurrence when wooden silos are used, the mold very often running in for more than a foot near each joint. Each sample was obtained by mixing a section taken from top to bottom of the silo 6 inches square, and then drawing out as much as was necessary, duplicates being taken to serve in case they were required. The temperature of the silos varied very little, the lowest being 38° and the highest 42°, the air outside at the same time being 34°. The hay which is in the open was 39°, or about an average with the silos.

Silo No. 1.—The top of the silage on July 17 was 33 inches, and when sampled, 39 inches from the top of the silo, so it had sunk only six inches since, very little mold, not a trace being discernible after the first inch, though the silage was of rather dark color for about five inches, after which it got lighter and had all the appearance of a good sample. Four samples of 2 pounds each were taken. Altogether 74 pounds were taken out of the silo, and will have to be allowed for when the weight of the bulk is ascertained. Temperature at 1 foot 38°, at 3 feet 38°.

Silo No. 2.—The top of the silage on July 17 was 15 inches, and when sampled, 31 inches from the top of the silo, so that the shrinkage since then was 16 inches. As far as could be seen there was not the slightest mold on the top, though it was slightly darker for the first three or four inches than it was immediately below.

The silage appeared to be very good, if anything slightly moister than No. 1. In both the sour silos the bulk had maintained its color well. Samples 2 pounds each; 66 pounds to be added when silos are weighed. Temperature at one foot 39°, at 3 feet 35°.

Silo No. 3.—The top of the silage on July 17 was 17 inches, and when sampled, 32 inches from the top of the silo, so that the shrinkage was 17 inches. A slight mold for 3 or 4 inches, and dark for another 2 inches afterwards. The silage was very sweet and uniform in quality, somewhat darker than the sour, but of much more pleasant smell. Samples 2 pounds each; eighty-eight pounds to be added when silos are weighed. Temperature at 4 feet 38°, at 1 foot 39°.

Silo No. 4.—The top of the silage on July 17 was 20 inches, and when sampled, 30 inches from the top of the silo, so that it had shrunk 10 inches. The mold ran variously about 6 inches down, some parts being affected and others not. Another slight vein about half an inch in thickness was found 2 feet down, and another not an eighth of an inch in thickness was found about 8 inches lower; with these exceptions the silage was remarkably sweet, with very little moisture, and smelt like hay. The weather, when the grass for this was cut, was exceptionally drying, and on an average it lost more than half its weight during the day it was lying in the field, and as it was left unweighted, and reached higher than 140° whilst fermenting, it can easily be understood that very little moisture would be found in the silo. It has turned out to be a very good food, but can hardly be considered a succulent one. Most probably under ordinary circumstances when the weather is not so drying this type would turn out more succulent. Sample 2 pounds; 34 pounds are to be added when the silo is weighed. Temperatures at 1 foot 42°, at 3 feet 40°.

Silo No. 5.—The top of the silage on July 17 was 20 inches, and when sampled, 25 inches from the top of the silo, so it had shrunk 5 inches. This is the chaffed, sour silo. This turned out very well; mold could only be traced 2 inches from the top, and there it was very slight. The rest came out moist and with the color well kept; it was apparently very similar, as far as could be judged by sight and smell, to silo 2. Sample 2 pounds; 96 pounds to be added when the silo is weighed. Temperature, 1 foot 39°, 3 feet 40°.

Silo No. 6.—The top of the silage on July 17 was 23 inches, and when sampled, 33 inches from the top of the silo, so it had shrunk 10 inches. This is the chaffed, sweet Silo. The first 4 inches were moldy, after which it was all very good and was apparently very similar to No. 3 silo. Sample 2 pounds; 56 pounds to be added when the silo is weighed. Temperature, 3 feet 41°, 1 foot 40°.

Hay.—The hay for experimental purposes had been stacked so that it formed the bottom portion of the rick. A layer of straw was spread over it and several tons of hay built on the top so that the hay should have the advantage of being stacked in a fair manner, without an undue amount of outside and without running into the roof, which is often more or less damaged, or, at any rate, not so valuable as where it receives a fair amount of pressure and heat. The average height of the hay was found to be a little under 7 feet. In sampling, a section was taken by cutting into the stack from the top and removing the surplus, after which six trusses were cut representing a cut into the stack for a distance of three trusses, two trusses deep; from this a sample was taken. The total weight abstracted amounted to 419 pounds, which must be added when the bulk is weighed. The temperature was 39°.

The hay has turned out of good quality, slightly browned by the heating, but not excessively. Sample 1 pound in weight.

Table of weights of hay and ensilage made, showing loss in weight

SILO No. 1.		
Sour ensilage (long):		Cwt. q. lb.
Total weight of silo and contents	71	3 0
Weight of silo, including covering boards	18	1 20
Net weight ensiled	53	1 8
	Cwt. q. lb.	
Net weight 13th April, 1886	47	3 13
Samples taken 26 and 27 February, 1886	0	2 18
	48	2 3
Loss in weight	4	3 5
SILO No. 2.		
Sour ensilage (long):		
Total weight of silo and contents	68	2 5
Weight of silo, including covering boards	18	1 19
Net weight ensiled	50	0 14
Net weight, 13th April, 1886	44	3 21
Samples taken 26 and 27 February, 1886	0	2 10
	45	2 3
Loss in weight	4	2 11
SILO No. 3.		
Sweet ensilage (long):		
Total weight of silo and contents	68	2 5
Weight of silo, including covering boards	18	1 13
Net weight ensiled	50	0 20
Net weight, 13th April, 1886	40	1 6
Samples taken 26 and 27 February, 1886	0	3 4
	41	0 10
Loss in weight	9	0 10
SILO No. 4.		
Sweet ensilage:		
Total weight of silo and contents	70	2 25
Weight of silo, including boards	18	1
Net weight ensiled	52	1 20
Net weight, 13th April, 1886	20	1 7
Samples taken 26th and 27th February	0	1 6
	20	2 13
Loss in weight	31	3 7

SILO No. 5.

Sour ensilage (chaffed):

Total weight of silo and contents.....	80	2	3
Weight of silo, including boards.....	18	2	17
Net weight ensiled.....	61	3	14
Net weight, 13th April, 1886.....	58	1	2
Samples taken 26th and 27th February.....	0	3	12
	59	0	14
Loss in weight.....	2	3	0

SILO No. 6.

Sweet ensilage (chaffed):

Total weight of silo and contents.....	68	2	7½
Weight of silo, including boards.....	18	2	7
Net weight ensiled.....	50	0	0½
Net weight, 13th April, 1886.....	44	2	12
Samples taken 26th and 27th February.....	0	2	0
	45	0	12
Loss in weight.....	4	3	16½

HAY.

	Tons.	cwt.	q.	lb.
Net weight when green.....	31	19	3	14
Net weight on 3d and 6th April, 1886, including samples taken 26th and 27th February.....	8	6	2	11
Loss in weight.....	23	13	1	3

"The tables of analysis," say the sub-committee, "given below show the value of the original grass as well as that of the samples of ensilage for feeding purposes. But to convey the information contained in them in a more easily understood form some explanation appears to be desired."

The various constituents which appear in the analysis shall be considered one by one and their function explained.

(1) *Moisture*.—Under this heading, besides water, is included certain volatile oils, which give flavor to the fodder, but the acetic acid, which is volatile, is not included under this heading. While the water is of no value as a food, yet it may render the true food more easily assimilated, and may thus play a part which, however, need not be further noticed. A small portion only of the volatile and fragrant oils will be lost by drying. During fermentation loss of carbon, in the form of carbonic acid, occurs, and this is also reckoned as loss in stating the proportion of ensilage obtained from grass.

(2) *Soluble albuminoids*.—These constitute a very valuable portion of the food, supplying nitrogen in the most assimilable form. It has been proved that nitrogen in such a state of combination is necessary to animal life, and the value of the albuminoids, as a food, depends, indeed, mainly on the proportion of nitrogen they contain. In a general way they may be considered as flesh-forming, as opposed to the fat-forming and heat-giving constituents, such as carbohydrates and digestible fiber.

(3) *Insoluble albuminoids*.—These resemble the former, except for the fact that they do not dissolve in water. They are, however, attacked by the constituents of the gastric juice during digestion, and are largely, if not wholly, assimilated by the animal system. The "albuminoid" nitrogen they contain is again to a great extent a measure of their value.

(4) *Digestible fiber*.—This fiber is of the nature of starch, and is convertible into soluble substances by the constituents of the saliva and gastric juice. It may be regarded as one of the bodies by the assimilation and oxidation of which the warmth of the body is preserved; beside this, it contributes towards the formation of fat.

(5) *Woody fiber*.—This may be regarded as for the most part indigestible, although recent experiments have shown that ruminant animals—oxen and sheep—do digest considerable amount of it.

(6) *Soluble mineral matter*.—From this the supply of phosphate of lime for bones and of common salt, and similar compounds, which form regular constituents of the flesh juice, and which aid in digestion, is obtained.

(7) *Insoluble mineral matter*.—This passes through undigested for the most part, though some of it may yield to the action of the acids, lactic and hydrochloric (?) in the stomach, and be thereby rendered assimilable. The silica contained in both (6) and (7) has little useful purpose, so far as is known.

(8) *Soluble carbohydrates, chlorophyll, &c.*—The carbohydrates are of the nature of sugar and gums. They perform a function similar to that of the digestible fiber, but being soluble are more easily assimilated. I am unable to state whether chlorophyll, the green coloring matter of plants, is or is not of use as a food.

(9) *Lactic and acetic acids*.—Lactic acid is the acid of sour-milk. It is normally present during digestion, and acts as a solvent on certain kinds of food. It is supposed that by its action on salt, in the stomach, it sets free hydrochloric acid, which has greater power of dissolving. Acetic acid is the acid of vinegar, and no doubt also aids digestion in somewhat the same manner as lactic acid. These acids are not normally present in fresh fodder, but are produced during fermentation in the silo. It will be noticed that they are present in but small amount in "sweet ensilage," but cause the acidity of "sour ensilage."

Instead of expressing the results of analysis in parts per 100, it may render them more easily grasped if the constituents are calculated in absolute weights, and to facilitate matters, it shall be assumed that each silo contained 50 cwt. when freshly loaded. The amount of hay shall also be considered as 50 cwt., for the sake of comparison. It will be noticed that this is not far from the real weight in all cases except that of the hay.

Table showing loss of weight of 50 cwt. of grass when made into ensilage; also percentage loss.

No.	Description.	Quantity.			Per cent.
		Cwt.	qrs.	lbs.	
1	Sour ensilage (long)	4	2	54	9.10
2	Sour ensilage (long)	4	2	154	9.28
3	Sweet ensilage (long)	9	0	22	18.40
4	Sweet ensilage	30	1	6	60.61
5	Sour ensilage (chaffed)	2	1	0	9.89
6	Sweet ensilage (chaffed)	4	3	22	4.50
7	Hay	36	3	26	73.97

It is of direct interest to the cattle-feeder to be able to compare readily the nutritive properties of these various kinds of fodder. In the following tables of comparison 100 parts of the fresh grass, analyzed by Dr. Voelcker, have been taken as the standard.

Constituents.	Grass.	Hay.	No. 1. Sour.	No. 2. Sour.	No. 3. Sweet.	No. 4. Sweet.	No. 5. Sour.	No. 6. Sweet.
Soluble albuminoids	0.36	0.11	0.34	0.49	0.46	0.29	0.34	0.18
Insoluble albuminoids	1.21	1.42	0.79	0.73	0.91	1.28	0.98	1.14
Digestible fiber	4.86	4.48	4.37	5.16	5.17	5.29	5.18	6.05
Woody fiber	7.65	7.87	6.91	7.58	7.22	6.93	7.22	8.61
Lactic acid			0.24	0.17	0.13	0.05	0.41	0.25
Acetic acid			0.29	0.13	0.06	0.01	0.28	0.10
Soluble mineral matter	1.19	1.16	1.46	1.75	1.18	1.11	1.85	1.32
Insoluble mineral matter	0.75	0.85	0.75	0.63	0.75	0.82	0.94	0.98
Soluble carbohydrates	5.86	5.83	3.57	3.62	2.81	3.18	3.45	3.34

To render this table more intelligible, the soluble and insoluble albuminoids have been classified together as flesh-forming, and the digestible fiber and soluble carbohydrates as fat-forming and heat-giving.

Table showing comparison of various fodders.

Ten thousand pounds of grass contain—

Yield—	Flesh-forming.	Fat-forming.	Salts.	Acids.	Total.
Hay	157	1072	194	.....	1423
Ensilage No. 1, sour	153	1031	201	.....	1385
Ensilage No. 2, sour	113	794	221	53	1181
Ensilage No. 3, sweet	122	878	238	30	1268
Ensilage No. 4, sweet	137	798	098	19	1147
Ensilage No. 5, sour chaffed	157	847	193	6	1203
Ensilage No. 6, sour chaffed	117	868	219	69	1268
Ensilage No. 6, sweet chaffed	132	969	230	35	1366

The general result of these experiments appears to be that there is a considerable loss of nutritive material, especially of the non-nitrogenous, or, as named above, fat-forming constituents, in converting grass into ensilage; and that the albuminoid, or flesh-forming constituents, are more reduced by the conversion into sour than into sweet ensilage. This loss is not compensated by the acids produced by the fermentation, nor have they any claim to be regarded as foods; however, they may act as stimulants to digestion in causing woody fiber to be more readily assimilated by the animal organism. On the other hand, the conversion of grass into hay is accompanied by little loss of nutritive material, although the loss of water may tend to render the food less easily digested.

The practical points for the farmer to consider are, what is the value of the respiratory and fat-forming matter and albuminoids lost during the process of ensilage and what is the extra cost of dealing with so much weight of water, as against the advantage of having succulent food throughout the winter and early spring, and of being able to secure crops which in so capricious a climate as ours would otherwise be frequently spoiled.

In concluding this report, I have pleasure in acknowledging the courtesy extended to me by William Smith, esq., a member of the committee.

LORIN A. LATHROP.

UNITED STATES CONSULATE,
Bristol, July, 8, 1886.

LOW PRICES FOR MANUFACTURED GOODS IN GERMANY.

REPORT OF CONSUL TANNER, OF CHEMNITZ.

It will be seen from the table which I have the honor to submit below that there has been an immense increase in the exportations from this consular district to the United States within the past three months. Within the last six months the exportations from this consular district have augmented \$830,669.43 over the same period of 1885.

The normal cry of "hard times" has been changed to that of "low prices," and there has been much complaint from manufacturers on this score. I have asked several to explain to me causes that have led to the prices reaching so low a point, and the reply has been, "Active competition."

CAUSE OF LOW PRICES.

But in conversation with an American gentleman who comes annually to Chemnitz to purchase the fabrics of this place, there will be seen to exist a very sharp difference of opinion on this point. I asked this American to account for the low prices of the fabrics exported so largely from this consulate to the United States. He replied:

The prices are not low for the real quality of the goods. These goods fill a certain demand with us, they appear well, and are cheap, but are not good or durable, and the prices the German manufacturers get for them are all they are worth. We have been paying too much for such fabrics, and have commenced to find it out by complaints from our customers of the worthlessness of such goods, and we slackened our orders, and prices fell, and they will continue to fall until they find their level, and that will be very low.

We have had so many complaints from our customers of these fabrics that we have debated the question in our firm if it would not be better to look to the reputation of our house by discontinuing entirely to deal in German manufactured articles. But others do it, and we have orders for such goods, and if we do not fill them our competitors will, so we are compelled to deal in them, though we never recommend them to our customers. We have been paying better prices for these poor goods than we are now paying, because German fabrics have always been low, so low that we were attracted by them and the good appearance of the stuffs. As soon, however, as our

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attention was called to the worthless character of the products we commenced to withhold orders, and German prices commenced to tumble, and they have gone on at it, and the bottom is not yet reached, low as prices now are. Manufacturers may say that present prices yield no profit, but prices may go lower by a reduction in the price of labor.

Though the price of labor is now so low that German workmen can only subsist on bread and artificial butter, lower than in any other civilized country, wages will be reduced by driving them down still lower, and taking the butter off the bread. For the poor wages paid German workmen poor work is returned, and so far as I am able to see the laborer here gets as much wages as the work he does is worth.

German laborers are largely employed with us and in England, and I know of no complaints of their work, more than that they will work for less than other laborers. The same causes that lead to them turning out poor work in Germany, does not in the United States or in England, for in both these countries they receive more than they do in Germany, and are better housed.

Do we turn out better fabrics than are made in Germany? Yes; but the Germans can get their raw material so much cheaper than we can, and their labor is so much cheaper, that we cannot compete with them if we do produce a better article. The greatest ambition of a German manufacturer is to follow the lead of England. If you will glance at your invoices you will see that there is an entire absence of German names for the fabrics sent to the United States. German stuffs are always marked under English names, where England is known to excel in the manufacture of any class of fabrics, or under a French, Dutch, or any name but a German, as best suits their purpose, and this shows that the German manufacturers are aware of the inferiority of their goods.

Why, in this view of the matter, do we encourage such practices by purchasing the goods under such disguises? The Germans do these things without encouragement from us. It was not from any encouragement they received from us that led them to give their sewing-machines American names and sending them abroad in the markets of the world to compete with American machines, and still they do this.

I report this conversation without any desire to indorse or condemn it. I am not able to refute it, and the same opinions have been expressed to me by other Americans.

The following table will show the exportations from this consular district for the three months ending with March 31, 1886, to the United States:

Articles.	First quarter, 1886.	First quarter, 1885.	Articles.	First quarter, 1886.	First quarter, 1885.
Cashmere cloth.....	\$830 09	\$4,903 37	Linen goods.....	\$15,882 62	\$17,257 90
Chemicals.....	4,724 56	4,726 79	Machinery.....	1,381 76	.....
China.....	.....	.....	Miscellaneous.....	19,405 02	16,548 31
Cotton goods.....	9,906 15	13,836 51	Mufflers and shawls.....	5,802 40	4,880 08
Cotton yarn.....	6,579 56	6,838 19	Musical instruments.....	25,610 07	11,608 23
Damasks.....	819 70	24,775 18	Shell goods.....	926 66	1,053 77
Dress goods.....	383,246 00	374,001 80	Toys.....	1,576 02	650 48
Embroideries and laces.....	209,713 95	97,983 67	Underwear.....	4,607 19	4,121 39
Flannels.....	7,834 48	.....	Wool cloaks and jackets.....	8,996 92	5,032 69
Gloves, cotton.....	289,369 95	236,796 11	Wool yarns.....	13,489 86	.....
Gloves, silk, taffeta, and kid.....	315,186 02	353,391 74	Furniture stuffs.....	49,968 26	.....
Gloves, wool.....	4,880 68	785 28	Piano and table covers.....	14,135 95	.....
Hosiery, cotton.....	1,705,009 08	1,397,484 77	Total.....	3,119,289 26	2,642,594 70
Hosiery, silk and plated.....	57,610 51	56,407 51	Increase.....	476,694 56	.....
Hosiery, wool.....	5,629 56	5,014 81			
Jersey cloth and Jerseys.....	7,221 17	4,616 77			

GEO. C. TANNER,
Consul.

UNITED STATES CONSULATE,
Chemnitz, Saxony, April 24, 1886.

AMERICAN TRADE WITH HAMBURG.*REPORT OF CONSUL LANG.*

I submit herewith a printed statement of the value of declared exports from this consulate to the United States during the quarter ending March 31, 1886, as compared with the exports for the same quarter of 1885.

You will observe a very marked increase in the trade for the quarter over that of 1885, amounting to \$772,780. It is interesting to note the changes in the trade as indicating not only the progress in our country in manufactures, but the steady and gradual growth of our agriculture in diversity of crops as well as improvement in the quality. It will be seen that the greatest increase in the exports was in "grains, plants, seeds, and fruits," which amounted to \$334,653.

It will be remembered that wheat, rye, oats, barley, &c., are not imported into the United States as food products, but as seeds to improve the American crops. The large shipment of plants exhibits a growing taste in our people to decorate and adorn their houses, yards, and gardens with the rarest plants and flowers that can be gathered from remote countries.

SUGAR.

The next largest item of increase in the list of exports from Hamburg is beet, raw, and grape sugars. This is due to a considerable extent to the very low price of sugar. It is contended that there is an overproduction of sugar in the Empire, and the producers of the beet and the refiners of sugar have agreed upon a large reduction of the product by shortening the acreage cultivated in beets. Whether the system of reducing the cultivation, with the view of increasing the price, can be successfully adopted will depend upon the price now paid, being below the cost of production.

So long as the price offers a remuneration for the labor bestowed in the production of the beet and its manufacture into sugar, such corners on a product cannot be maintained by a people who must labor each day for their living.

CANNED AND DRIED FRUITS AND MEATS.

The first largest item of decrease is in "dried fruits and vegetables," an evident conclusion that the demand for these articles is being supplied at home.

The second largest decrease is in "canned meats, fish, &c.," showing, also, an increasing supply from American industries to meet the demand.

It may be observed that there is constant inclination by the German manufacturers to imitate the style and character of American manufactured products. With these imitations they are seeking the markets not only at home but abroad. These methods indicate that American manufactures suit the tastes and wants of purchasers, and enforce the thought that a more persistent effort by American merchants and manufacturers might amplify our foreign trade.

ENLARGING TRADE.

The most favorable commercial treaties with countries are of no avail unless methods are adopted to convince and bring before consumers the superiority of the goods which are privileged under such treaties.

The recent condition of trade is not that consumers shall seek sellers, but sellers must afford every convenience to buyers. Hence a necessity for the adoption by our merchants and manufacturers of some plan by which American goods can be more prominently presented to the trading public.

International exhibitions have been tried and have proven of benefit, but they are generally of short duration and are visited through curiosity and the love of novelty. Traveling agencies are of great advantage, once the goods have been introduced, but until this is secured, their agency is not so efficient.

EXHIBITION OF AMERICAN GOODS.

The suggestion is here made that a more efficient means of introducing American goods into Germany could be promoted by co-operation of exporters and manufacturers in establishing a permanent exhibition at Hamburg, supplied with specimens of such goods as are adapted to the wants of German consumers.

This exhibition might be made of great extent as a general agency for the sale of American goods. Here orders can be made and through the general manager supplied direct from the manufacturers. It might be the means, too, of introducing a direct exchange and interchange of the products of the two countries, to wit, the German producer could present here his raw product and receive in payment manufactured wares from America, and *vice versa*.

This grand, permanent exhibition would have opportunities during the year of making minor exhibits at the interior towns during their annual fairs where German goods are placed before the public.

A paramount advantage to such an agency for the sale of American products would be its being, living and doing business here, in daily contact with German merchants and consumers; and, backed by the manufacturers in the United States, its responsibility would guarantee confidence and attract a business that would be both influential and remunerative.

I know no system more admirably adapted to making known to foreign consumers the wares of our manufacturers; and the thought that more consistent and persistent efforts should be made by American manufacturers and exporters to introduce into this country their goods has been suggested by the various imitations of American goods that are to be seen in the German markets.

The fact of these imitations impresses the idea that American styles are sought and the genuine American article would be accepted.

W. W. LANG,
Consul.

UNITED STATES CONSULATE,
Hamburg, April 26, 1886.

Statement of the value of declared exports to the United States from Hamburg during the quarter ending March 31, 1896, compared with the same period last year.

Articles.	First quarter 1896.	First quarter 1895.	Decrease, 1896.	Increase, 1896.
Animals, birds, &c	\$1,549	.....	.....	\$1,549
Basket, earthenware, and rattan	39,789	330,739	.....	18,080
Beet, raw, and grape sugar	698,241	535,599	.....	162,642
Books and printing matter	4,146	.....	.....	4,146
Bristles, feathers, and horsehair	105,325	84,868	.....	20,457
Canned meat, fish, and vegetables	8,326	40,623	\$31,797	.....
Cheese	49	.....	.....	49
Chemicals, drugs, dyes, paints, and colors	40,995	22,445	.....	18,550
China, glass, and porcelain ware	17,595	5,578	.....	12,017
Coals	544	.....	.....	544
Coffee	28,506	42,823	14,317	.....
Cotton and cotton goods	15,929	8,623	.....	7,306
Dextrine	20,682	11,068	.....	9,714
Diamonds and jewelry	27,833	7,837	.....	19,996
Dried fruits and vegetables	5,783	33,053	32,270	.....
Ebony	739	.....	.....	739
Eggs and albumen	5,091	2,738	.....	2,353
Fancy goods, toys, and objects of art	12,698	4,154	.....	8,544
Grains, plants, seeds, and fruits	246,705	12,052	.....	324,653
Herrings	23,080	.....	.....	23,080
Human and animal hair and haircloth	8,637	8,200	.....	437
India and hard rubber	70,997	85,070	9,073	.....
Ivory and ivory goods	14,982	2,930	.....	12,052
Leather and leather goods	4,987	2,514	.....	2,473
Leather and other gloves	46,458	46,963	505	.....
Linen, hemp, and jute goods	9,984	12,613	2,249	.....
Liquors (malt and distilled), wines, mineral waters, and fruit-juices	33,133	13,823	.....	19,310
Manure-salt and kainite	70,964	79,741	8,777	.....
Metal, metal goods, and hardware	21,696	14,973	.....	6,113
Miscellaneous	3,178	24,168	20,995	.....
Musical and scientific instruments	6,061	6,219	138	.....
Paper and manufactures of paper	12,732	.....	.....	12,732
Perforation caps and explosives	464	.....	.....	464
Portland cement	50,763	5,941	.....	50,822
Rags, waste paper, cuttings, old metal, &c	127,550	20,632	.....	106,918
Raw hides and skins	71,221	34,678	.....	36,543
Rennets, guts, and bladders	8,399	12,931	4,532	.....
Roller patterns	2,428	.....	.....	2,428
Salt	330	.....	.....	330
Silks and silk goods	1,261	.....	.....	1,261
Tobacco and cigars .....	.....	11,763	11,763	.....
Wool and woolen goods	32,486	22,567	.....	9,921
Zinc and spelter .....	.....	5,469	5,469	.....
Totals	2,017,198	1,244,418	.....	772,780

WAGES OF SEWING GIRLS IN BERLIN.

REPORT OF COMMERCIAL AGENT SMITH, OF MAYENOE.

In a recent number of the Central Journal for Textile Industry (*Centralblatt für die Textil-Industrie*) is an article respecting the making of wearing apparel at Berlin, in which are set forth some of the prices received by sewing-girls for various kinds of work, making a lamentable picture of long hours of toil for starvation wages.

It appears therefrom that workers on aprons are especially badly situated, a large number of whom, sewing from eleven to fifteen hours a day, receive weekly but 2 to 3½ marks (47 to 83 cents), while others in good occupations are engaged upon a better class of articles, earn about 10 marks (\$2.38) a week. A tricot-seamstress, when diligent, makes 8 marks (\$1.90). Button-hole stitchers are miserably paid, and get 23 to 25 pfennigs (5½ to 5¾ cents) a gross. This means, in order to obtain 2 to 5 marks (47 cents to \$1.19) a week, constant sitting and labor for twelve to fourteen hours on week days and four to five on Sundays.

Glove-sewers, working twelve to fourteen hours a day, including Sundays, can make 6 marks (\$1.42) a week. The wages of workers on boys' clothes, with eight to ten hours of labor a day, vary from 3 to 10 marks (71 cents to \$2.38). A great many girls are employed in the umbrella factories. They make 6 to 7 marks (\$1.42 to \$1.66) a week, toiling twelve to fourteen hours a day. For sewing a dozen umbrellas of the better sorts 1.40 to 1.50 marks are paid (33 to 35 cents), which it is said sixteen hours of energetic labor are required to do. Makers of laundry articles, such as collars, &c., get very different wages. Some, with fifty-four hours of work a week, earn 10 to 15 marks (\$2.38 to \$3.57), while others, busily plying the fingers day and night, reach up to 6 and 7 marks (\$1.42 to \$1.66) a week. The majority get the latter. A pearl-sewer usually receives still less, namely, 5 to 6 marks (\$1.19 to \$1.42), and lower, for twelve hours' work.

In the succeeding issue of the paper, however, published the following week, appeared a brief communication from a gentleman who took exception to the foregoing figures in the following language:

In no branch of business is more fabling done over the wages of seamstresses, &c., than in ours. Let me say, as an old worker in the business, that a skillful machine-stitcher—that is, one that has worked for about half a year—earns, with ten hours of labor, and without any special exertion, 12 to 16 marks a week (\$2.55 to \$3.80); a button-hole whipper under like conditions 10 to 14 marks a week (\$2.38 to \$3.33); one who does the embroidering of designs with a machine, 25 to 30 marks a week (\$5.95 to \$7.14). If you desire to have proofs for my assertions, wage-tables for years back are at your disposition.

Pearl-workers get constantly 10 to 12 marks a week (\$2.38 to \$2.85). These wages are paid in all establishments where sewing is done.

Do not think that there is a surplus of seamstresses. On the contrary, we are never able, even with the assurance of still higher wages, to fill places that are constantly open with us.

JAS. HENRY SMITH,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Mayence, June 11, 1886.

AMERICAN APPLES IN GERMANY.

REPORT OF COMMERCIAL AGENT SMITH, OF MAYENCE.

The new American method of drying fruit, which gives such satisfactory results, especially in apples, is susceptible of being developed into an important industry.

Nowadays in this neighborhood—and I suppose the same is true of all Germany—if you want dried apples, the American fruit is usually the first offered to you, while a long string of adjectives are thrown off at you in praise of it. These apples are to be met with almost everywhere, and are preferred to all others, on account of the excellence with which they are dried and for their cheapness. For about three years past—may be four—American dried apples have been in the German market, and have met with great success, forcing the native product almost entirely out of its own domain. And it is really a remarkable accomplishment that the Americans have been able to place upon the market a dried fruit which almost vies in freshness and flavor with the fresh fruit, and yet can be kept for long periods where that perishes.

I believe that both for our fruit-evaporators, as well as for the dried fruit itself, this country would afford a fine market if properly worked

up. The German fruit-driers are of a very inferior character, and the Germans are very far behind the Americans and French in drying fruit. The German cultivators of fruit now find, when they want to dispose of their dried fruit in the markets of neighboring towns, that it is a much easier matter to produce than to sell; and the man who has German dried fruit to vend goes almost in vain upon his journeyings with his pack of samples upon his shoulders, and learns when he seeks to sell his goods that although his product is regarded as being as good, if not better, in the natural quality of the fruit than the foreign article, yet is so inferior in the packing, appearance, and general excellence of the drying that very few persons want it, and, moreover, discovers to his amazement how much finer and cheaper, in apples for instance, the American fruit is to his own. With pears he meets with more success, and finds them preferred to the French and Italian; but it is always easier to sell dried apples than dried pears, and it is said that twenty centners of apples can be sold to one of pears. The best dried plums come from France.

The consumption of good dried fruit with the skin off is slight in this country—may be owing to the inferiority of the drying. The most of families do not like it, and it is seldom seen upon the tables of hotels and restaurants. To find a market it must be sold very cheap, and in this particular the Americans ought to be able to meet the demand.

American dried apples, I am told, sell 25 to 40 per cent. cheaper than the German.

Like everything else, the Germans are doing their best, I understand, to imitate and counterfeit the fruit-drying machines which our people have put upon the market, and it behooves the American manufacturers to see to it that the fair field which is open to them here is not lost beyond recovery.

JAS. HENRY SMITH,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Mayence, March 11, 1886.

AMERICAN PORK IN FRANCE.

REPORT OF CONSUL DUFAIS, OF HAVRE.

Notwithstanding many abortive attempts on the part of commercial and labor organizations to induce the French minister of commerce to repeal the edict against the importation of American pork, the Chambers of Commerce of Bordeaux and Havre made a new effort in that direction.

Several other chambers were represented at a late meeting at Paris, at which M. Seigneuret of Bordeaux read a dispatch from the United States announcing that the Senate had passed a bill authorizing the President to prohibit, by proclamation, the importation of goods or produce from European countries which made vexatious discriminations against American produce.

The delegates, after discussing the question, called upon M. Lockroy, the minister of commerce. Among them M. Brunet, the vice-president of the Bordeaux Chamber of Commerce, and M. de Guerhoënt, the delegate from Havre, used every argument to induce him to withdraw the decree

in the same manner as it had been issued, viz, by proclamation and without consulting the Chambers, but all to no purpose.

M. Lockroy acknowledged that not only a great mistake, but also an injustice had been committed, and that he was very much in favor of the repeal of the measure, but the feeling in the Chambers was so decidedly protectionist that not even the enhancement of the duties would satisfy them. They wanted absolute prohibition.

This being so, it was useless to propose the change which he himself had advocated; any measure tending to readmit pork would be voted down, and the protectionist tendency of the Chambers was such that not only provisions, but every other agricultural product, would be protected by higher import duties.

It is so evident that nothing will be done on the part of the present Government to do away the discrimination against the commerce of a friendly nation that all hopes of a favorable change have been abandoned by those opposed to the prohibition. The millions of ill-paid and scantily-fed laboring men of France will continue to pay tribute to the French hog-raising farmer.

F. F. DUFAIS,
Consul.

UNITED STATES CONSULATE,
Havre, July 21, 1886.

PETROLEUM IN AUSTRIA.

REPORT OF CONSUL GILBERT, OF TRIESTE.

Petroleum ranking fourth amongst the exports of and first among the imports into this consular district from the United States, I group together the following statistical tables:

TABLE I.—*Imports of American and Russian petroleum, crude and refined, at the port of Trieste, as obtained from the local Chamber of Commerce.*

Years.	American.		Russian.	
	Barrels.	Cases.	Barrels.	Cases.
1880.....	265, 100	38, 195		
1881.....	330, 514	70, 877		
1882.....	230, 635	37, 160		
1883.....	165, 674	39, 080		
1884.....	168, 183	44, 587	28, 657	10, 609
1885.....	68, 812	64, 538	33, 514	19, 519
1886 (from January 1 to March 31).....	9, 785	75	19, 920	

The most cursory inspection of this table shows the very remarkable increase since 1883 of the Russian over the American import, and especially during the first three months of the present year.

TABLE II.—*Table of prices.*

Description.	Price per barrel.	Price per case.
	<i>Florins.</i>	<i>Florins.</i>
American, 1885.....	9. 75	10. 25
Russian, 1885.....	8. 75	8. 50
American, 1886.....	9. 75	10. 75
Russian, 1886.....	8. 37	8. 75

Turning now to Fiume, the petroleum trade there during the same period is exhibited in the following table:

TABLE III.—Imports of American and Russian petroleum, crude and refined, for the port of Fiume.

Years.	American.		Russian.	
	Crude.	Refined.	Crude.	Refined.
	100 kilos.	100 kilos.	100 kilos.	100 kilos.
1880.....				
1881.....		141,950		
1882.....		204,497		
1883.....		59,886	2,000	124
1884.....	244,776		22,920	
1885.....	441,785		84,876	
1886.....	688,171	6,626		6,888
1886 (from January 1 to April 30).....	79,736		162,964	546

It is obvious that this table manifests the same fact, namely, the sudden large increase of the Russian import, due to the price.

AUSTRIAN REFINERIES.

The great refineries of this Empire are at Vienna, Pesth, and Fiume. Smaller works exist in Hungary, which use the crude oils of Galicia and Roumania; these refineries are capable of supplying about 75 per cent. of the demand. That at Fiume is the only one in this consular district.

The crude oils used there are drawn entirely from the United States and the Black Sea. Its capacity is 1,400 barrels daily. Table No. III, above, shows that until 1883 its supplies were exclusively American.

The product for the year 1885 was 325,239 barrels.

It is to be noted that land has lately been purchased for the extension of these works; that the Rothschilds are the principal owners; that they have recently bought the Palashkowsky oil properties at Batoum and Baku. If now, what seems very probable, they establish their own line of transport tank-ships between Fiume and the Black Sea, it is evident that competition on the part of the United States will be impossible unless measures be taken to reduce the price of the American crude oil.

The illicit use of American barrels in this Russian trade is becoming quite general here. The price of these barrels now is 2.50 florins; the freight to the Black Sea empty, and back filled, is 3.35 francs. The American merchant will know how this compares with the freight to and from the United States, a matter upon which I am not informed.

PRICES AND DUTIES.

One hundred kilograms of refined Russian oil cost at Batoum about 8.50 francs; at this rate the cost at Trieste, "Trieste white," is about 7.15 florins; and being refined upon the American system, it is substantially the same quality. To-day the lowest offer of American oil is 8.60 florins.

The present tax of Austria-Hungary on 100 kilos of refined petroleum is 10 florins, gold, equal to 12.50 florins, paper. Crude oil, refined in Austria, pays an entry duty, if Russian, of 1.43 florins, gold; if from the United States, of 1 to 2 florins, according to grade.

There is also an excise of 6.90 florins on both American and Russian oils.

Petroleum refined at Fiume from American crude sells for about 8 florins. If sold at 7.50 florins a fair profit would be made. It follows that American refined oil at the present prices cannot compete with the local refined.

Russian petroleum refined in Austria is not, properly speaking, crude oil; it is known to the trade as distilled oil, paying an entry duty as crude.

COMPETITION WITH THE UNITED STATES.

Considering the geographical situation of the refineries of Austria-Hungary and the great advantage of supplying them with material from the Russian oil fields by means of tank-cars and tank-vessels, it becomes still more difficult for the American exporter to compete.

The Rothschilds having refineries also in France and Spain, the importance of the purchase of the Russian properties referred to above should cause American exporters some anxiety for the trade in those countries.

I have it from good authority that reservoirs for the reception of crude and refined petroleum are soon to be erected at Trieste by the "Nobel Company," the oils arriving in "tank-vessels" and then being transported inland in tank-cars.

In conclusion, I can but remark that unless American exporters can make it possible to place upon the markets of Trieste and Fiume petroleum of a better quality than the late shipments and at a lower price, I see but little prospect of their retaining even the present portion of the trade.

HENRY W. GILBERT,
Consul.

UNITED STATES CONSULATE,
Trieste, May 29, 1886.

AMERICAN COMMERCE WITH THE EAST.

REPORT OF CONSUL-GENERAL CARDWELL, OF CAIRO.

Time was when commercial interests in the United States were far more intimately allied with the East than now. The fact that in 1885 only three American vessels, with a net tonnage of 2,149, passed through the Suez Canal, while the aggregate number of vessels passing through it was 3,621, representing a total net tonnage of 5,864,963, is sufficient proof that United States commerce with this portion of the globe is not the channel through which wealth is emptied into the lap of any one in the Western World. That riches might be reaped from American commerce with the Orient no one would deny. Supply and demand could be made just as imperative between the East and the United States as between it and any European country. I know that our people would buy liberally of Eastern products, and I am not ready to admit that the superior outcrop of American manufacture could not be made to compete for sale with, and in some cases even exclude, the manufactured products of European countries. It is folly to say that cheap European products exclude the more expensive American. Labor is cheaper in Europe than

in the United States, but methods employed in American manufactures give advantages which cheap labor cannot overcome, and these methods impart a finish not equaled on this side the Atlantic.

CAUSES OF DECLINE.

The decline of American trade with foreign countries is chargeable to more than one cause. Its decline began with that of American shipping, and has kept pace with diminishing American bottomry and a misdirected excessive system of taxation acting as an embargo on American trade with foreigners. As a natural sequence of the damage arising from these causes, the manufacturers of the United States have failed to make the merits of their goods known in foreign countries. These are apparent to careful observers, especially in all labor-saving machinery and appliances, but the manufacturers of such machinery and appliances have apparently been satisfied in supplying home demand, leaving foreign industry to wedded customs, or, at best, to employ such methods as would be laughed at in the United States. English influence has been exerted towards teaching the Soudanese the art of war, while the tax-oppressed fellahs of Egypt still tread out the wheat with oxen and grind the straw with the feet of beasts and with wooden drags. Savages have been led to the more dexterous use of the weapons of war, while Egyptian fellahs in gathering the vast grain crops of the Nile Valley still pluck with their hands the wheat stalks from the fields. Improved plows and cultivators and harvesters and thrashers and the best American-made cotton cleaning and ginning machinery would do more in pacifying a distressed population in twelve months than a richly beskirted army could possibly do in a lifetime. Improved agricultural machinery could be made to revolutionize the material condition of Egypt. Under its influence taxation could be made less oppressive, while the products of the soil would be far more remunerative to agriculture.

But how are the American products to be gotten to Egypt and Turkey and elsewhere in the East? There would be profit in placing them there, for I have seen the inferior manufactures of other countries selling here at figures that would give handsome profits on our most perfectly made goods. For instance, I have seen the commonest little leather-roller cotton-gin, of plainest workmanship, selling here for \$100 and more, when I know such a machine could be turned out of an American factory for one-third this sum. In one cotton-ginning establishment I was shown a thirty-nine saw, English-made gin, and it not a good machine, which cost at the factory £70 sterling. American gin manufacturers will readily see the enormous profit on manufacture. Again, I have seen an English hydraulic press in operation here, not doing the best work, which costs at the factory in England a sum equal to about \$600. I know a press made at Richmond, Va., a better machine, the manufacturer's price of which is not two-thirds of this sum.

OPENING UP THE MARKET.

The products of our manufactories could be sold here. They could be made to compete with English products and the richest profits be left. But to sell goods they must be introduced. Manufacturers' agents should come to the East, show goods, and demonstrate their advantages. They should put machines into operation, and soon they would be popularized. Still the barrier first mentioned to American trade in the East presents itself. There is no direct communication for permanent trade. A very few sailing ships make the Eastern voyage, but the

steamship is unknown as an agency for this commerce. I was talking to a merchant of Port Said a few days ago, and it was his opinion that the time had come for the establishment of a monthly line of steamers between New York and the Eastern Mediterranean sea-ports. He thinks a line touching at some French port and at some port in Italy might not pay at once, but he is satisfied that in a few months it would pay well. There is an established trade which such a line could command, and this could be largely added to in a short time by the push and energy of a few manufacturers and dealers. Merchants and manufacturers of other countries are growing rich off the profits of trade with the East, and there is no reason why those of the United States should not profit thereby. Here is a country of great resources, needing encouragement, and ready to pay richly kind hands that will ameliorate its condition and that of its distressed, tax-burdened population. No people in the world pay such taxes as the Egyptians. The tithe-gatherer is still alive and active in Egypt. He comes from the northern side of the Mediterranean, lending money to the government and the people. The unceasing toil of Egyptians pours enormous wealth into his coffers. Poverty is left with the one, and wealth departs with the other. I have learned to regard these people with a deep interest. They are the embodiment of patience, as they are the personification of never-ending, wearying, profitless toil. They are the hewers of wood and the drawers of water for nabobs, and, what is most marvelous, they seem to love the toil exacted of them. They live without reward, and go down into early graves with hardly a shroud left them by their moneyed masters. But thus it has been with Egypt and Egyptians for thousands of years. Foreigners only have been enriched, and these have gained absolutely nothing in return. Can we not build up an interest in these people in the New World? Will not Americans assist in ameliorating their condition, and reap riches in return?

JOHN CARDWELL,
Consul-General.

CONSULATE-GENERAL UNITED STATES,
Cairo, Egypt, June 22, 1886.

CATTLE PLAGUE IN INDIA.

REPORT OF CONSUL-GENERAL BONHAM.

It is reported in Calcutta that the cattle plague, known as the "rinderpest," generally understood, I believe, to be contagious, prevails in parts of the Madras Presidency within this consular jurisdiction.

I inclose herewith an extract on this subject clipped from "The Englishman," a reliable daily newspaper published here, of date the 1st instant.

Large quantities of baled hides (dried and salted) are shipped from India to the United States. Not being myself an expert on the subject of the liability of our cattle in America to contract the rinderpest from the importation of the hides of cattle which have died with that disease, I content myself with reporting the facts only as they came to my knowledge.

B. F. BONHAM,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Calcutta, June 3, 1886.

[From the Calcutta Englishman, June 1, 1886.]

Although the statistics of cattle mortality in the Madras Presidency are said not to be strictly accurate, they are sufficiently so to prove that cattle disease causes a considerable loss of property every year. Last year the total number of deaths is returned at 43,788, of which 12,057 are attributable to rinderpest, 11,226 to anthrax, 5,208 to dysentery, and the remainder to other diseases. There is a large establishment kept up in the Presidency for the special purpose of attending to cattle diseases, the staff consisting of one inspector, one deputy inspector, fourteen local inspectors, and four probationers, who are stationed about in different districts. Unfortunately, the inspector cannot devote the whole of his time to the cattle disease, as he is occupied also with his lectures at the Veterinary School at Saidapet; but it is hoped that an arrangement will soon be made by which he will be relieved of this double duty. It is satisfactory to see that, with the exception of the Ganjam district, the natives have great faith in the medicine supplied to them by the inspectors, so it is hoped, as the system becomes better known, that the demand for the medicine will be increased.

MANUFACTURE OF LIME JUICE IN TRINIDAD.

REPORT OF CONSUL TOWLER.

The lime tree grows wild in Trinidad, and when I came here three years ago the fruit was not exported. I recommended a gentleman of enterprising disposition to ship a few barrels of limes to America as an experiment. The fruit decayed in the transit, and the attempt was a failure. Another plan was resorted to, namely, the neutralization of the acid juice with chalk; but this plan has been abandoned, and the expressed juice itself is now exported either in the simple state as obtained by pressure, or after evaporation to about one-tenth its volume. The simple juice finds a market in America, and the condensed juice in England.

CULTIVATION OF THE LIME.

There are only two parties here on this island that cultivate the lime for exportation. From one of these I have received the following information:

Lime trees grow and bear in any soil, but the better the soil the larger the fruit. They are planted from 12 to 16 feet apart. When young they have to be pruned and trained to assume the shape of an umbrella. When about to form a lime plantation it is best to form a nursery a year beforehand, and then to transplant the young trees, pulling them up from the soil, cutting off the end of the pivot root, and then placing them in the ground where they are to grow.

A lime tree yields on an average 10 gallons of juice. The fruit is allowed to drop off, and is then collected and conveyed to the works, where the limes are passed first through the cutter, which rips them open, and then through rollers and the press to separate the juice. These cutters, rollers, and press are constructed in a very simple and primitive way, and admit of very great improvement.

The juice is then, as before remarked, exported either in this condition or it is condensed by boiling.

A barrel of limes yields 7 gallons of juice.

COST OF JUICE.

	Cents.
The cost of collecting a barrel of limes is.....	10
Carting a barrel to the works	3
Cutting and pressing.....	3
Cost per barrel.....	16

The cost of lime juice, including packages, should not exceed 12 cents per gallon; lime juice is generally sold at a price varying from 36 cents to 60 cents per gallon.

The essential oil of limes is extracted from the rind before crushing by grating on rasps with the hands; the oil thus extracted is called the hand-made oil, which is superior to that which is obtained from the crushed limes and by distillation. A hundred gallons of juice will yield by distillation about three quarts of the essential oil.

This branch of industry is capable of great expansion by means of capital and intelligence; the soil is always ready to do its duty.

JOHN TOWLER,
Consul.

UNITED STATES CONSULATE,
Trinidad, British West Indies, January 7, 1886.

MEXICO.

AGRICULTURE, MINES, AND FACTORIES.

REPORT BY CONSUL CAMPBELL, OF MONTEREY.

I have the honor to submit the following report upon agriculture, mines, and factories in this consular district. In preparing this report I have found it impossible to comply with the suggestions made in circular from the Department of State of July 15, 1885, except in the case of agricultural products and the products of mines and smelting works.

Aside from the fact that the Mexicans refuse to give any information regarding their business, foreigners who are engaged in business here, "except in a few instances," absolutely refuse to allow the least information regarding their business to become known, and it is impossible to gather any reliable details concerning either the manufacture of cotton goods or to obtain any data regarding the cost of production as compared with the price of labor. This is extremely difficult even in the case of agricultural productions, as not one Mexican in ten can give the least idea what a certain amount of an article he brings into market for sale costs him to produce. He will tell you that a bushel of corn cost him so much to raise it, and will then sell his whole crop for 75 per cent. of the amount he solemnly assures you he paid to raise it, and it is the same with everything else. To come at anything like a fair estimate of the matter, one can only take the selling price of a certain article, average it for a number of years, take the cost price which the wholesaler pays, average it in the same way, and, knowing the ordinary prices of labor, strike a price which relatively only shows the cost of production as compared with that of labor. Again, in the matter of taxation, one firm or manufactory will pay a certain tax on its production, while another engaged in the same business or manufacture will pay about half as much or twice as much, as the case may be, so that no estimate can be made except by striking a broad average of the whole, of course more or less unreliable.

PRODUCTS OF AGRICULTURE.

DESCRIPTION OF LAND.

The soil of the valleys in the vicinity of Monterey is a rich, dark loam, varying in depth from four to eight feet, under which is a substratum of lime conglomerate. Upon the whole I do not believe that this country can be surpassed for pleasant and profitable farming, as the soil requires but little cultivation to produce abundant crops. The best evidence of this is the fact that, laboring under the disadvantage of being compelled to resort to irrigation to bring his crops to maturity, and knowing absolutely nothing of the science of agriculture, using the most primitive and awkward tools, that have been handed down to him by his forefathers for ten generations, the average Mexican farmer will produce a yield from his land equal in quantity and quality to the most favored portions of the United States.

Still, the general average yield of large tracts of land in this part of Mexico is far below that of an equally large portion of land in the United States. The reasons for this are many. In the first place, the Mexicans have a system of irrigation, which, embracing as it often does large sections of country, and exciting the admiration and wonder of the foreigner, is yet most primitive and inefficient, and except for the fact that it is the result of the most patient and ill-directed labor, would excite no admiration at all. Besides this, the inefficiency and unreliability of the labor employed, and the very primitive implements used, combine to render the result of a season's farming small and unsatisfactory to persons who too readily ascribe to the barrenness of the land a result which really is attributable to the careless and misdirected work of man.

CUSTOMARY TENURE OF LAND.

General titles to land originated with the Spanish crown, and have been handed down from generation to generation. Ownership of large tracts of land and of the immense haciendas is absolute, and held under deeds from the Government or previous owners. The smaller farmer and land-owner in this vicinity, instead of holding deeds for the land he occupies, owns a right to so many minutes, hours, or days of water per month—that is, he is entitled to draw from the main irrigation ditch which skirts or runs through his land water for so long a time each month, and to cultivate so much land as this water will irrigate. In the various community properties in this State the foundation of the title to land in whole towns is vested in the water right, and so scattered have become the heirs to this right that the result is often the loss of any power of sale by those actually remaining in possession. In many communities there are persons whose only claim to use the general grazing lands belonging to the community, and to cut wood upon the same, is the ownership of *ten seconds* of water per month, and yet even this small right entitles them to hold for their exclusive use such land as they may have under fence, and to live on community land so long as they can build themselves a house and make their ten seconds of water answer their purpose. In such communities agriculture is paralyzed, and, as the only person affected by this pernicious system is the small farmer, the very foundation of progressive cultivation of land is undermined wherever it exists.

CUSTOMARY RENT OF LAND IF WORKED UNDER LEASE.

Rent of land in the vicinity of Monterey is regulated by the water facilities for irrigation, and will average about \$4 per acre for irrigated land, and \$2 per acre for land cultivated without irrigation per year. Crops on the latter are very uncertain, however, and the cultivation of unirrigated land, while successful in some seasons, is in the main hazardous, and often results in the loss of all the seed and labor expended, from lack of rain.

GENERAL CONDITIONS OF LABOR.

The general condition of the agricultural laborer in Mexico is as unenviable as can well be imagined. While the system of peonage, which made the master almost the absolute owner of the person of the man, is in a measure done away with, still enough of its worst features remain to make the condition of a "laborer for hire" an extremely unpleasant one. Aside from that, the tiller of the soil takes life very easily. Of money he knows but little, and consequently he is in some respects to be envied. His house, if he be connected with some hacienda, is comfortable enough as a protection from the weather, but is adapted to no other purpose. Built of adobe, without windows, and having but one door, its floor but the hard beaten bosom of Mother Earth, and with the addition of an untanned cow-hide, serving for chair, table, and bed, it shelters, and only shelters, the half wild progeny of children that every laborer, however poor, surrounds himself with. In the immediate vicinity of Monterey this state of affairs is not so prevalent, but such is the general condition of the agricultural laborer in Northern Mexico. His ignorance is compulsory, and all the evils which follow in the train of ignorance are his.

DESCRIPTION OF TOOLS USED.

Among the more enlightened and progressive Mexicans modern agricultural implements are used to some extent, and American mowing, reaping, and thrashing machines are slowly coming into use. American plows are also common enough, but of a small and entirely unfit pattern for the use to which they are put. Following the idea that the wooden plow is a necessity, the Mexican farmer, if he buys an American plow at all, insists upon getting so small a one that the result of its use is but little more effective than would follow that of an old-fashioned iron-toothed harrow. Such innovations are rare, however, and by ninety-nine out of one hundred farmers the only tools used are the plow made from a forked stick, the hoe weighing often from 3 to 5 pounds, and the saw-toothed sickle. With these three tools, year in and year out, Mexican crops are raised and gathered.

The plow is literally a forked stick, the shorter fork being sharpened, and in some cases shod with iron, serving for the share, the longer being fastened to the top of the yoke, and lashed with raw-hide thongs to the horns of the oxen which draw the prehistoric implement. In some cases a brush harrow is used on land after plowing. The only tool used in the care of the growing crop is an immense hoe, so ponderous as to cause dismay in the mind of the beholder, lest one fell swoop should destroy, instead of improve, the growing plants; but as the crop is usually left to take care of itself, and the main use of the hoe is to open and close the irrigation ditches, for which it is well adapted, but little actual damage is done. The sickle is of the conventional type of the time of the

Patriarchs, but, instead of having a sharp edge, it is provided with saw teeth, and is used in gathering small grain, the use of a cradle for such a purpose being apparently unknown. In nearly all of Mexico, with the exception of some few districts, all grain is thrashed by the feet of horses or mules, which are driven round in a ring, the straw having been first spread on the ground, and the grain is separated from the chaff by the action of the wind. One objection urged by the Mexicans to thrashing machines is that they leave the straw whole, while by the use of horses it is by the constant trampling cut up as fine as though run through a feed-cutter, and, as this straw is universally used as feed, any further preparation is obviated.

KIND AND DESCRIPTION OF MACHINERY USED.

On some of the large haciendas in this vicinity, notably that of Bella Vista, belonging to General Treviño, and on the hacienda belonging to Señor La Grange, American agricultural machinery is more or less used. Subsoil plows, cultivators, and mowing, reaping, and thrashing machines are to be found in some localities. Here and there a windmill is seen, and in many ways the Mexican farmer is realizing that he is far behind the age and laudably endeavoring to bring into use more improved methods of cultivating the ground than he is accustomed to. The cheapness of manual labor, however, combined with the enormous cost attendant upon the introduction of improved machinery, is a serious drawback to him. Besides these hindrances, should any part of his costly and unfamiliar machine break it must, in nearly every case, be thrown aside for that season. No Mexican blacksmith can repair it, as usually the broken part is of cast iron; and the distance from the manufactory precludes the obtaining of a new piece before another season.

In the cultivation of rice and sugar-cane, the tools used are of the most primitive kind, and such machinery as is used in the after-treatment of both crops hardly deserves the name. The rice is hulled and prepared for market in the most simple and wasteful manner. The grain is separated from the husk by pounding in a wooden mortar, made by scooping out the end of a log, or, as in some cases, making half a dozen such mortars in one piece of timber. The rice is hulled, to be sure, but at the expense of the health of those engaged in the work, and at a cost much above that of the same work done by separators. There are a few separators used, but not a sufficient number to in any perceptible degree affect the total crop. The machines for the treatment of sugar-cane are equally rude and simple, resulting in the loss to the producer of a large portion of the available produce properly treated.

CUSTOMARY WAGES OF LABORERS—MODE OF PAYMENT—HOURS OF LABOR.

The rate of wages paid agricultural laborers varies somewhat with the seasons. As in the United States, the highest wages are paid during harvest. Ordinary daily labor is paid at the rate of 37½ cents per day, and during harvest 50 cents is often paid for a day's work. The mode of payment also varies. Some employers pay their servants in cash once a month, or once a week, or daily, as they see fit. Payments in cash are uncommon, however, as nearly all the owners of large haciendas employ a system of payments in orders upon themselves for supplies. Of course the employer is also the storekeeper, and, as his idea of the profits of his business is by no means small, the result is that the employé is

constantly in debt to his employer, as the miserable pittance paid him, coupled with the exorbitant profit demanded by his master on supplies furnished him, scarcely enables him to obtain the bare necessities of life for himself and his family. Hours of labor are apparently long, extending as they do from the first break of day to the last moment of light, but as the Mexicans, master and man alike, indulge in the siesta, and as rests during work are frequent, the actual time spent in work is small. In addition to the amount of money paid to laborers per month, it is the custom to give each laborer one bushel of corn per month, and house rent free.

SUBSISTENCE OF LABORERS.

Agricultural laborers in Mexico, as in other countries, are enabled from their very calling to obtain more and a greater variety of food than the same classes in other occupations. Taking this into consideration, however, the Mexican farm-hand is content with the simplest and most common food. Tortillas (cakes made from corn meal, without seasoning of any kind) and frijoles, or beans, constitute the main and often the only subsistence of a Mexican family. Vegetables and meat are luxuries. Wheat bread is never used, and among the lower classes almost unknown. Meat and fish do not enter into the laborer's bill of fare at all. When he gets either it is an uncommon luxury. Goat's milk, and cheese made from the same, are the only dairy products. A little butter is made, but is only sold in the towns.

Table showing the average prices of provisions in the city of Monterey.

Articles.	Prices.	Articles.	Prices.
Beef:		Flour:	
Fresh.....per pound..	\$0 06	Mexican.....	\$0 05
Choice cuts.....do.....	12½	American.....	07
Fresh mutton.....do.....	06	Corn meal, Mexican per bushel..	1 00
Fresh veal.....do.....	12½	Dried beans.....per pound..	12½
Fresh pork.....do.....	12½	Dried apples, American.....do..	25
Dried beef.....do.....	12½	Dried quinces, Mexican.....do..	18½
Lard.....do.....	20	Salt, Mexican.....do.....	05
Kids.....each	\$0 50 to 0 75	Chile, "Mexican pepper".....do..	10
Turkeys.....do.....	75 to 1 50	Pepper, black.....do.....	25
Chickens.....do.....	12½ to 25	Kerosene oil, per 5 gallon cases..	3 50
Milk:		Candles:	
Goat's.....per gallon..	50	American, spermaceti, per	
Cow's, none in market.....		pound.....	37½
Butter, American.....per pound..	75	Mexican, tallow per pound.....	15
Cheese:		Matohea, wax, per dozen boxes..	37½
American.....do.....	50	Beans, snap.....per quart.....	12½
Mexican.....do.....	37½	Peas, English.....do.....	12½
Sugar:		Cabbage.....each	\$0 03 to 12½
Mexican peloncillo.....do.....	04 to 05	Beets.....per peck.....	50
Mexican refined.....do.....	15 to 18	Onions.....per pound.....	07
New Orleans cut loaf.....do.....	22	Potatoes:	
Coffee, Cordova.....do.....	20	Irish.....do.....	08
Tea, best.....do.....	2 00	Sweet.....do.....	03
Chocolate, Mexican.....do.....	50	Carrots (camotes).....per peck..	37½
Rice.....do.....	10	Tomatoes.....do.....	37½
		Eggs.....per dozen.....	12½ to 37½

CLOTHING.

The Mexican laborer is at but small cost for clothing. He wears, instead of shoes, sandals, tied to his feet with strips of dressed hide. The sandal is nothing more than a piece of sole-leather cut to the size of his foot. His clothes are made of the coarse, heavy linen of the country, and a

full suit costs him \$2.50. He always carries a blanket, which in many cases is woven by the women of his family, but in case he buys it, costing from \$2.50 to \$10; but as one blanket will last him many years, it adds but little to his yearly expenses. His crowning glory is his hat. No matter how poor he may be, he will manage to have a "sombrero" gorgeous with silver spangles and heavy with silver cord, or, if he prefers straw to felt, he will be equally extravagant in its decoration; but, as like the blanket, the hat, even though its first cost may be out of all proportion to his means, will be made to do duty for many years. It adds but little to the tax upon his yearly income. The total cost of clothing for one year will not exceed \$10 or \$12. He is at an equally small expense for the necessary clothing for his family. Four or five dollars a year will provide one or two calico dresses for his wife; and his children, when clothed at all, are but scantily covered with the remnants laid aside by the parents. Of household goods he is ignorant. A few untanned hides are used for beds, and dressed goat or sheep skins serve for mattress and covering.

DESCRIPTION AND RENT OF DWELLINGS.

The laborer is seldom at any expense for rent. On large ranches all the dwelling places are the property of the ranchers, and generally the workman is furnished with a shelter, rent free. If, however, he prefers a house of his own, he cuts himself a sufficient quantity of cane from some convenient place, builds a wattled house of the same, plasters it with mud, roofs it with the leaves of the "Spanish dagger," a species of palm tree, and he has a house, of one room to be sure, but ample for the requirements of himself and family, and costing him nothing beyond a few days' labor. In this one room he will live with his wife and children, his father and mother, or hers, or both, as the case may be, and so many brothers and sisters, adult or young, as may elect to live with him. On the ranches the dwellings are built of adobe, more after the fashion of a wall, inclosing a common patio or yard, than of a house. In this yard are kept such domestic animals as may be necessary for the daily use of the ranch; and the houses are simply little rooms, opening from the inner side of the wall into the general yard. The yard has but one entrance, used by men and animals alike. In the small agricultural villages the houses are built of adobe or cane, each with its little yard, but of the same general description as those mentioned above.

It is almost impossible to ascertain the cost of labor as compared with the customary unit by which produce of different kinds is sold. Corn, which one year, as in the present season, sells for from 25 to 40 cents per bushel retail, may the next season retail at from \$2 to \$2.50 per bushel, and the cost of production will vary as much, even though the two crops may not be more than a few months apart. Taking it year in and year out, for, say, a period of ten or fifteen years, the average cost price of a bushel of corn shelled and ready for market is not far from 40 cents, and its average selling price from 75 cents to \$1. It is much more difficult to arrive at any approximate idea even of the value of the labor necessary to produce a given quantity of any crop.

CUSTOMARY MODE OF MILLING OR PREPARING GRAIN.

By far the greater part of the corn used in this part of Mexico is ground by hand, on a metate, which is nothing more than a flat stone, roughened. The grinding is done entirely by the women, and the corn

so prepared is used in the making of tortillas. Of late years hand mills for grinding corn, imported from the United States, are coming into use, and there are a few grist-mills, but by far the larger part of the total corn crop is prepared for food as it is required for use by each family. Wheat and other small grains are ground into flour in ordinary mills, of small capacity and primitive machinery, run usually by water-power. The Mexican flour is of very good quality, though dark in color, owing to lack of facilities for bolting.

LOCAL AND NATIONAL TAXES.

The tax levied on land by the State is \$8 per each \$1,000 of valuation, but as the valuation by the Government appraisers is very low, taxes on land do not exceed \$2 or \$3 on each \$1,000 of actual valuation.

The following are rates of tariff on breadstuffs imported from foreign countries:

Articles.	Duty per pound.	Articles.	Duty per pound.
	<i>Cents.</i>		<i>Cents.</i>
Corn.....gross weight..	1	Butter.....net weight..	12½
Corn meal.....do.....	1	Cheese.....do.....	7½
Pepper.....do.....	12½	Chocolate.....do.....	27½
Potatoes.....do.....	1½	Cocoa.....do.....	10
Rice.....do.....	4	Vegetables.....gross weight..	1
Sugar.....do.....	7½	Molasses.....net weight..	4
Coffee.....do.....	5	Oats.....gross weight..	1½
Wheat.....net weight..	2	Onions.....do.....	1½
Wheat flour.....do.....	5½	Beans.....do.....	1
Barley.....gross weight..	2½	Pean.....do.....	1

From this consular district in good seasons corn is shipped in large quantities to the interior States, as is also sugar; but there is little shipment, if any, of agricultural productions out of the country. A few fresh vegetables and fruits are sent to the United States. All goods shipped from Monterey to the interior are sent via railroad to Saltillo, and thence by carts. The average cost of transportation from Monterey to interior points is 7½ cents per ton of 2,000 pounds per English mile.

PRODUCTS OF MINES.

THE SAN ANTONIO MINES.

The following description is of the San Antonio mine, owned by A. W. Gifford, a citizen of San Antonio, Tex. This mine is situated 12 miles from the city of Monterey, on a spur of the Sierra Madre Mountains, at an elevation of 2,500 feet above the surrounding valley, and about 4,000 feet above the level of the sea. This mine is a well-defined vein, in a limestone formation, pitching with the formation of the mountain at an angle of about 90 degrees. The mine is developed by eight tunnel levels on the vein from the surface, running into the mountain from 50 to 100 feet, connected for ventilation.

All tunnels are on ore, which is dropped to the lower level, and carried to the face of the mountains in wheelbarrows, where it is loaded on pack animals, and transported to the smelter, a distance of 3 miles, at a cost of \$2.52 per ton, each pack animal carrying 200 pounds per trip, averaging three trips in two days.

There is no difficulty whatever in working this mine. Mexican labor is employed, with a foreman and assistant, and a blacksmith to sharpen

tools. Pay, when working full force, run shifts of eight hours: Foreman and blacksmith \$1 per day, good miners 75 cents per day, and common laborers, for carrying out and cleaning ore, 50 cents per day of eight or ten hours' work.

The ore from this mine is a carbonate, running from 20 to 40 ounces of silver to the ton.

RENTS OR ROYALTIES.

A State and Government tax is paid, which is supposed to be 1 per cent. of the product of the mine, but this is estimated by the tax collector, and cannot be complained of. It is collected and a receipt given every four months in advance.

MACHINERY, FUEL, ETC.

No machinery used in this mine. Use Lafin and Rand powder and dynamite, discharging blasts by electricity.

Charcoal used for the blacksmith shop at the mine. This coal is burned in the surrounding country by farmers, and costs from \$10 to \$12 per ton.

Subsistence of laborers is in the main the same as that described under the head of agriculture.

Cost of labor by the customary unit of product, say 1 ton of ore: Two miners and one common laborer, working eight hours, at a cost of \$2, will mine and place on dump 1 ton of ore, estimated, including wages of foreman and powder for blasting, to cost \$3 per ton.

QUALITY AND CUSTOMARY USE OF PRODUCT.

The product of this mine is smelted here, and when carrying over sixty ounces of silver to the ton is also refined here, the silver being shipped to the Mexican mints, and the lead sold in this country at from four to five cents per pound; but the market is limited. There are no local taxes. Products of mines in Mexico could and should be shipped to smelters in the United States, but the duty on lead ore prevents. Many mines in Mexico would be developed by American capital if the ore could enter our own country without paying the high tariff. It will always be a stumbling-block in the way of the development of Mexican mines if product is sent to distant points for conversion. Some very rich copper, gold, and silver ores are sent to Germany by freight to Laredo and Corpus Christi, Tex., thence as ballast, at a total cost of \$16 to \$20 per ton.

PRODUCTS OF SMELTING FURNACES—DESCRIPTION OF WORKS.

The smelting works described below are situated twelve miles west of the city of Monterey. They are owned by A. W. Gifford, of San Antonio, Tex. The smelter is a Scotch slag-eye, with a capacity of ten tons each twenty-four hours. Blast from a Sturdivant blower, run by water-power, furnished by a new American turbine water-wheel manufactured at Dayton, Ohio.

METHOD OF WORK.

Mexican labor, under an American superintendent, speaking Spanish. Work two shifts of twelve hours. Furnace runs from eight to ten days, when it requires two or three days for repairs.

No royalties or patents.

FUEL.

Coke, shipped from the Indian Territory, is used, costing, laid down at smelter, \$15 per ton; also use some charcoal, produced in the country, costing \$10.50 per ton.

WAGES OF LABORERS AND CUSTOMARY HOURS OF LABOR.

Good smelters are paid \$1 per day of twelve hours; assistant smelters, 75 cents per day of twelve hours; and yard hands, 36 to 50 cents per day of twelve hours.

SUBSISTENCE OF LABORERS.

(Same as described in Agriculture.)

Cost of labor by the unit of the ton, or other customary measure of product of crude metal, say in one ton of 2,000 pounds: One head smelter, one day, \$1; one assistant smelter, one day, 75 cents; three laborers, one day, \$1.50, equals \$3.25, which will produce 1 ton of bullion, costing, including total cost of labor, superintendent's wages, book-keeper's wages, rent, and incidentals, \$10.

QUALITY OF PRODUCT.

Lead bullion carrying from 40 to 60 ounces of silver per ton. Mexican Government charges an export duty on bullion carrying over 60 ounces of silver per ton.

The product of this smelter is sent to Liverpool, England, by Mexican National Railway to Laredo, Tex.; thence in bond to Corpus Christi, Tex.; thence by steamer to Liverpool at a cost of \$20 per ton.

DESCRIPTION OF VARIOUS MINES IN THE MONTEREY DISTRICT.

The following is a list and description of the various mines and mining properties operated in this consular district:

The Guadalupe Mining and Smelting Company of Philadelphia, Pa., own and operate the Minas Vejas, Guadalupe, and El Doctor mines, located in the Minas Vejas Mountains, 25 miles northeast of Villadama, State of Nuevo Leon. Their smelting works are located at Guadalupe Station, on the Mexican National Railway, 1½ miles north of Villadama, and consist of two cupola water-jacket smelters with a capacity of 100 tons of ore per day. This company has invested about \$150,000 in the development of their property.

The Anglo-Texas-Mexican Mining and Smelting Company, of Houston, Tex., owns the Chihuahua, Farandula, Coyache, and Moreno mines, situated in the Minas Vejas Mountains. This company has spent about \$60,000 in machinery and development of mines by construction of tunnels, but are now in litigation, from other parties having jumped its most valuable property, and work is suspended until a final decision of the courts.

The Rosario Mining and Smelting Company, of Dallas, Tex., own the old Rosario mine, situated in the Sierra Madre Mountains, five miles west of the town of Salinas. This mine is being developed by a 900-foot tunnel, so run as to cut the ore-body below the old Spanish workings.

The San Antonio mine, situated in a spur of the Sierra Madre Mountains, 12 miles west of Monterey, and the San Juan mine, situated in

the main chain of the same mountains, 18 miles west of Monterey, are private properties, owned and operated by A. W. Gifford, of San Antonio, Tex., with a small smelting works located at Santa Catarina one-half mile from the Mexican National Railway. This gentleman has \$30,000 invested in the above property.

The Vallecillo Mining and Smelting Company, of New York City, own and operate the extensive property known as the Vallecillo mines. These mines are situated 65 miles northeast of the town of Villadama, in a valley just at the edge of the foot-hills of a spur of the Sierra Madre Mountains. These mines differ from those in the mountain ranges, being a true fissure dipping at an angle of about 70 degrees. This company are now working on the fifth level, the vein having been worked for a distance of 3 miles, with first, second, third, fourth, and fifth levels. They employ from 300 to 400 men and boys. Their extensive smelting works are adjoining the mouth of the main shaft. Water is encountered in this mine at the fifth level, necessitating the working of extensive pumping machinery night and day to drain the mine. About \$350,000 has been invested by this company.

The Colorado and Refugio Mining and Smelting Company own and operate the Colorado and Refugio mines, situated 100 miles northeast of Monterey, in the Cerralvo Mountains, a branch of the Sierra Madre. These mines were developed by an American company, of Forth Worth, Tex., to a paying basis, under an unfavorable lease from the Mexican owners, who repurchased the lease, and these mines are now operated by Mexicans living in Monterey. About \$20,000 is invested by this company in American machinery and buildings.

The Santa Nifia mine and smelter is owned and operated by A. W. Gifford and A. C. Schryver, of San Antonio, Tex. This mine is located in the Cerralvo Mountains, about 120 miles northeast of Monterey. This is a new property, purchased by the above-named gentleman when only a 15-foot shaft had been sunk, as a bonanza property, for \$5,000. The main shaft has been continued to a depth of 87 feet on a fine ore-body, and work is being continued on the same. The smelter is located about 25 miles from the mines, and is turning out about 10 tons of bullion per month. Fifteen thousand dollars had been invested in this property up to October 1, 1885.

In the above-mentioned districts are about two hundred old mines that have been worked to a profit by the Spaniards, and are now owned by Mexicans without capital. Some of them are worked on a small scale, and the ore smelted in primitive Mexican furnaces with blast furnished by a common blacksmith's bellows operated by man-power. Many of them would pay handsomely in the hands of enterprising Americans with sufficient capital for their proper development.

In the San José district, situated 150 miles southeast of Monterey, in the State of Tamaulipas, are several American companies operating mines, some forty first-class mines being developed. These are tributary to the city of Monterey. About \$200,000 of American capital has been invested in this district during the past three years.

COTTON MILLS.

There are three cotton mills in this district, one owned and managed by a Spanish firm, one by an English company, and the third by an English and Mexican company.

I can obtain little or no information as to the factories or their business. It is either because the manufacturers consider that it is neces-

sary that their business matters should be kept strictly secret, or that they are more or less jealous, one of the other, and fear more competition.

Such information as given below, while very meager, is the best obtainable regarding this branch of business in this State.

The class of goods manufactured at two of these mills is plain, unbleached cotton cloth of a medium grade. At the third mill solid-colored prints and bleached domestics are manufactured; but the larger portion of the fine cotton goods sold in this market are imported.

The cloth manufactured here, however, compares very favorably with the same grade of foreign manufacture.

The mills in this district are one and two stories high, substantially built of a soft white limestone. The machinery used is nearly, if not all, of English manufacture, and is run by water-power, furnished at great expense and from a considerable distance.

The raw material used in these mills is raised in the adjoining State of Coahuila and imported from the United States. The Mexican cotton is of an inferior grade, and is usually mixed with a good grade of American cotton, which costs from 16 to 18 cents per pound delivered at the mill.

The plain unbleached cloth sells here at from 10 to 12 cents per vara of 33 inches.

The wages paid mill operatives range from \$4 to \$8 per week, and board is furnished at the factories at \$2.50 per week. For reasons above stated, no information can be obtained as to the cost and kind of machinery used, the number of looms in operation, &c., nor can the relative value of the output of a mill, as compared with the cost of the labor employed. These mills are now running on half time.

The following are the Mexican import duties on cotton and cotton manufactures:

	Centa.
Cotton, unginned, gross	per kilogram... 03
Cotton, ginned, gross	do..... 08
Cotton cloth, unbleached or white, of plain texture even when clarified, per square meter.....	11
Cotton cloth, mottled, dyed, or stamped, of plain texture even when clarified, per square meter.....	15
Cotton cloth, unbleached, white, or colored, of all kinds of texture, not plain, open-worked, nor embroidered.....	per square meter... 17
Cotton cloth, white or colored, open-worked or embroidered.....	do..... 20

ROBT. C. CAMPBELL,
Consul.

UNITED STATES CONSULATE,
Monterey, Mexico, October 21, 1885.

AGRICULTURE AND LABOR IN YUCATAN.

REPORT OF CONSUL THOMPSON.

Yucatan, where settled, and outside of the cities, is essentially a land of haciendas or plantations, of which there are 1,500, more or less. As these plantations furnish the life, almost the existence, of Yucatan as a civilized center, I will describe a representative hacienda.

It encompasses an area of about 5 square miles. Of this large tract about 25 per cent. is devoted to cultivation; the rest is given over to

the thorn-bush and cactus. This uncultivated portion is partially utilized by the droves of cattle which seek a sparse living from the leaves and shrubs.

On one side the eye is gladdened by the sight of a goodly grove of tall trees. The cocoa palm, the orange, lemon, platana, sarymuya, and ahucate are each represented and furnish their fruits in wanton profusion. Buried in the cool, dark, green depths of this grove lies the *casa grande*, or great house, of the proprietor. It is a large, low, roomy building, constructed of the lime and white stone of the country. A short distance from the house is a *noria*, a water-wheel that by means of pockets attached takes up the water from the *cenote*, or water cave, underneath, and deposits it in an aqueduct by which it is conveyed to a great central reservoir. From thence it is carried by a very perfect system of irrigation all over the great garden attached to the *casa grande*. Twice a day the rich earth of both garden and grove is thus refreshed. In this garden of deep, rich loam are cultivated corn, potatoes, peas, beans, cabbages, lettuce, and a host of other vegetables, both familiar and strange to people of the northern Republic.

Were this a fair sample of Yucatecan agriculture, Yucatan would be a farmer's paradise and farming one of the lighter sports. Unhappily this is not the case. Nearly every yard of this deep, rich earth was laboriously dug from the swales and hollows in the rocky fields by the *labradores* and carried by them in bags upon their backs, often from a distance, to form this garden's fertile soil. Even the soil of the great grove itself was in years long ago formed in this way and is every year thus renewed.

Not far off the smoke-stack and ascending clouds show that the process of hemp-cleaning is in active operation. The heniquen-cleaner is a toothed wheel of large diameter, and driven by steam. The long, thick heniquen leaf is thrust in toward the wheel; the teeth seize it, and in a second simply a mass of fiber is left clinging to the butt of the leaf still held in the hands of the operator; a second similar process converts the whole into a bunch of fiber.

Inasmuch as a full report by myself upon the hemp industry of Yucatan is in process of preparation, I shall refrain from more than a brief outline of the product.

LABORERS' HUTS AND WAGES.

At a greater or lesser distance from the *casa grande* lie the *tannas*, or thatched homes of the Indian *labradores*, or tenant laborers. These are generally small buildings of but a single room; the walls are built of mixed lime and red earth. The roof is thatched with palm leaf or a kind of coarse straw. These little homes, generally overshadowed by a tamarind tree or cocoanut palm, are very picturesque, and the native Indian, if left to themselves, will always strive to make them so. Around each is a small *milpah*, or patch of maize, calabazas, and chile. In return for the privilege of living upon and cultivating this piece of land, the tenant laborer agrees to work so many days, weekly, upon the hacienda free of hire. Rarely are the laborers paid by the hour; their idea of the value of time is too vague. A certain task is required and paid for. In heniquen-cleaning 1,500 leaves is considered a fair day's work, and for this task a sum equal to twenty-five cents United States coin is paid; all overwork is gladly allowed and paid for, as labor is scarce. Twenty five cents will represent the average laborer's daily earnings. Out of this he has to find food and clothing for himself and family. The

above-named expenditures are not so serious, however, as to cause the laborer much anxious thought.

FOOD.

Great stress is laid upon the capacity for cheap living of the Celestial coolie or Indian ryot. I believe that the Yucatecan *labrador* can at least equal them in this respect. A ball of maize paste, or *masa*, half as large as a man's head, and a gourd of water give him the chief part of his daily sustenance. When hunger presses he detaches a portion of the paste, puts it in his ever-ready *xicara*, or calabash bowl, half filled with water, and with his not too clean fingers stirs it rapidly about until the milky pojol results, and is rapidly disposed of. Hot gruel of maize paste, or *ortolle*, forms his morning meal; the cool pojol his noon-day sustenance and a refreshing beverage between-times. Sometimes after dusk, and when all work is over, he partakes of *tortillas* (thin cakes of maize) and an occasional chile, or green pepper. When *frijols* (the black beans of the country) or a small portion of cheap meat is added, he sits down to a sumptuous repast. Fruit costs him but the picking. The chile and calabazas cost him but little more. Thus it can be seen that the Yucatecan *labrador* is not an expensive creature to feed. Earning twenty-odd cents a day, and having a portion of that deducted by the planter in payment of the ever-present debt, a *labrador* can provide the coming week's provisions for his family, and still have sufficient funds left to "take a rest" all day Sunday and the following night. Getting stupidly intoxicated with anis or aguardiente they politely term "taking a rest," and often during a prolonged debauch many do indeed take their final rest.

CLOTHING OF LABORER.

The usual costume of a farm *labrador* when fully dressed consists of a hat, shirt, and pantaloons. When at work, however, he generally discards both hat and shirt, rolls up his pantaloons legs until they can be rolled up no further, then rolls down the waist until a scanty breech-clout is formed, after which proceeding he is ready for work. His pantaloons are generally made of stout cotton cloth drilling. He is no mean judge of dry goods, and in his purchases is rarely overreached. The American make ("Indian Head" and "Cabot A") is preferred by him to all other brands of any country. Three and a half varas (a vara is nine-tenths of a yard) furnish him with sufficient of the above material for his pantaloons. For this he pays *un real y medio cuartillo* per vara, or about eighteen cents per yard. His shirts are generally made of blue striped cotton cloth. The American goods from the Shetucket Mills, called by the Indians *cotin*, are preferred for this garment, and it takes about three and a fifth yards, costing about twenty-five cents a yard, to make one.

The women are clad in an uipil and fustan. The uipil is a loose, wide garment, low-necked and short-sleeved, while the fustan is simply a short skirt. These garments require 4 varas or $3\frac{3}{4}$ yards each for their make; they are made of the same material as are the men's pantaloons.

Two changes of apparel are considered sufficient yearly for either sex. In addition to the above, a woman is generally possessed of a scarf, or rebosa, with which she protects her neck and head from the tropical sun.

The children's clothing, even when they possess any, has a value too slight to be accounted.

LAND RENTS.

Land, when rented, is disposed of on the following system:

All new lands pay to the proprietor an annual rental of 10 *cargas* of maize, or the equivalent thereof, for every 100 *mecates* of land. A *carga* of maize is equivalent to $1\frac{1}{2}$ bushels, while a *mecate* is, speaking in round terms, one-tenth of an acre; hence new land pays an annual rental of $1\frac{1}{2}$ bushels of corn to the acre. After one or at most two years' cultivation the land is considered to be worth only one-half the rent of the preceding year; accordingly only 5 *cargas* per 100 *mecates*, or six-sevenths of a bushel per acre, are exacted. After the third or fourth year land is considered to be useless for gardening purposes, and fit only to raise hemp upon.

HEMP.

Luckily for Yucatan, the worn-out soil is precisely the kind of land that this particular species of agave thrives best upon. The plant is best propagated by cuttings, the young plants being allowed to grow at will until three years old, after which they are transplanted into regular rows and fields. Eight years are given them to mature into plants able to bear the cutting, and then the result of these years of patient waiting will continue to flow uninterruptedly for many years if moderate care be exercised.

The leaves are cut by a peculiar instrument, a cross between a sickle and a carving knife, called by the natives *córba*.

The leaves are made into a systematic bundle of about twenty-five each, and carried by the laborers upon their backs to the tram-car or cleaning-wheel, where they are passed through the process before mentioned. This cleaning-wheel is the only kind of agricultural machine, as we understand the term, in use upon the farms of Yucatan. Even the plow is practically unknown.

Each *mecate* of hemp land should produce yearly four *arrobas* of merchantable hemp. An *arroba* is the equivalent of 25 pounds; therefore each acre, or 10 *mecates*, should yield at least 1,000 pounds of *heniquen* fiber ready for shipment.

To cut and pack 1,500 leaves is considered to be an ordinary day's work. These 1,500 leaves, when cleaned and dried, will produce about 3 *arrobas* or 75 pounds of fiber. One cleaning-wheel, with two men to tend it, is calculated to clean easily 7,000 leaves per day.

A 400 pound bale of fiber, cut off from the plant, but still in the leaf, is estimated to cost \$4, or 1 cent a pound; when cleaned, bleached, and baled ready for shipment, the cost is probably a small fraction over 2 cents per pound.

A hemp plantation containing 10,000 *mecates*, or 1,000 acres, should produce annually 1,000,000 pounds of merchantable hemp.

For the purpose of easy reference I will recapitulate, and in so doing follow the "form of inquiry" given for the products of agriculture.

(a) *Description of land*.—In the wild country a rich alluvium. In the settled portions and along the coast a low, level soil, thinly covering calcareous bed rock.

(b) *Customary tenure of land*.—Generally owned in absolute by the large proprietors.

(c) *Customary rent of land*.—In round terms 10 per cent. of the gross produce.

(d) *General conditions of labor*.—The Yucatecan *labrador* is a unique production, and the conditions governing him are necessarily unique. Taken as a whole and under a just owner (I use the term "owner" advisedly) his condition is not bad. It is for the interest of the proprietor

to acquire the name of being a good master. The value of a farm is not so much in the number of acres it contains as in the number of laborers it can control. Suitable farm labor is very scarce. Strangers, from the nature of the climate, are useless, absolutely so, as farm laborers. Laborers from the Canary Islands have been imported, but the experiment was a failure. A negro laborer stands the test no better than the Canary Islanders. Upon the Mayan Indian alone fall the heaviest burdens of agricultural labor.

(e) *Description of tools used.*—Hoes, shovels, picks, crow-bars, and a kind of light ax are among the well-known tools in ordinary use. The machete and corba are large, heavy knives of various shapes designed for general cutting work around the hacienda. In the hands of a native a machete will do wonderful work, whether it be in a cutting affray, performing a surgical operation upon a diseased mule or steer, or clearing a path through the otherwise impenetrable jungles.

The agricultural implement most commonly in the hands of the ordinary worker of the soil is a branch broken from the handiest tree. He will choose a crooked stick in preference to a hoe. I have noticed the native laborers upon a Yucatecan railroad toss aside the shovel and take the pointed stick immediately after the overseer passed. Maize, or Indian corn, is planted by the aid of a staff shod with an iron point. This is plunged into the mixed earth and stones and then withdrawn, leaving a cavity into which the seed corns are thrown. A movement of the naked foot covers the grain, and the planting is finished.

(f) *Kind and description of machinery.*—The hemp-cleaning wheel is the only agricultural machine in use in Yucatan. There is no chance to use even the plow; the thin, rocky soil will not permit it.

(g) *Customary rate of laborers' wages.*—They are paid by the task. An ordinary laborer will make the equivalent of 25 cents for every day that he works. Payments are generally made weekly.

(h) *Subsistence of laborers.—Food.*—Allowance of food for one laborer, his wife, and four children for seven days (the children are too young to work):

Maize, one bushel.....	\$1 00
Chile.....	6½
Frijoles.....	6½
Coffee and other luxuries.....	6½
	1 18½

Yearly amount of clothing for the laborer:

Two shirts of blue-striped shirting, requiring 3½ yards each, at 25 cents per yard (7½ yards, at 25 cents per yard).....	\$1 90
Two pairs pants of stout cotton drilling, requiring about 3 yards each (6 yards, at 18 cents per yard).....	1 08
Two straw hats at 20 cents each (two hats, at 20 cents each).....	40
	3 38

For the wife:

Two "uipils," containing 3½ yards each, of cotton drilling (7½ yards, 18 cents per yard).....	1 30
Two "fustans," containing same quantity and material as the uipile (7½ yards, 18 cents per yard).....	1 30
One "rebosa".....	1 25
	3 85
Total yearly expenditure for clothing may be safely estimated at.....	8 00
Total yearly expenditure for food.....	65 00
Average daily expense for clothing.....	.025
Average daily expense for food.....	17
Total daily living cost for each person of family may be safely estimated at....	4

For shelter a small thatched house, usually containing but one room; furniture consists of a hammock or two, several earthen jars and gourds, bowls to hold provisions, &c.

(i to j) To produce a 400-pound bale of heniquen fiber, four men at 25 cents per day will have to work nine days or the equivalent thereof in tasks, involving a cost per bale of \$9 and a fraction over.

HENIQUEN EXPORTS.

Heniquen fiber is the principal article of export from Yucatan to the United States. During the fiscal year ending June 30, 1884, there was exported from Progreso, Yucatan's port of entry, heniquen fiber having a value of over \$2,500,000, American gold. During the calendar year of 1884 the amount of hemp shipped to all parts from Yucatan reached the figures of 233,311 bales, averaging 400 pounds per bale. The value of the above, expressed in Mexican dollars, is 3,334,609. In American coin the value is expressed at \$3,045,304. The duties and taxes of State and national Governments amount to the sum of \$137,000, Mexican money. Over six-sevenths of the above exportation went to the various ports of the United States, New York leading with 187,978 bales.

The transportation from Yucatan is entirely by water. Three lines of steamships give regular communication with the outside world. Many sailing vessels and "ocean tramps" find freighting awaiting them at Progreso.

The rates of freight between the port of Progreso and United States vary, of course, but one quarter of a cent per pound and 5 per cent. primage is a rate that can be safely relied upon.

THE LOCUSTS AND HENIQUEN.

A scourge of locusts harasses poor Yucatan, and under this bane all agriculture, save the single product hemp, droops. Fields of maize are planted, and thrive for a while only to be devoured level with the ground in one short hour by a host of the pests. The heniquen plant for some reason seems to be let severely alone by them. This is providential, and enables the planter, by selling his fiber, to obtain from the United States the grain that the locusts deprive him of the power to raise at home.

EDWARD H. THOMPSON,
Consul.

UNITED STATES CONSULATE,
Merida, September 18, 1885.

HAMMOCK-MAKING IN YUCATAN.

REPORT OF CONSUL THOMPSON, OF MERIDA.

From time immemorial hammocks have been articles of use and barter in Yucatan.

I have found the remains of hammock beams and hooks in the ruined cities that lie buried in the Yucatecan wilderness. Yucatan to-day exports more hammocks than any other province in the world.

PROCESS.

They are made entirely by hand, and with the aid of a few primitive, yet effective, implements.

With a couple of straight poles, a shuttle, a thin slab of zapoli wood, and a pile of heniquen leaves at hand the native is ready to accept contracts for hammocks by the piece, dozen, or hundred.

The poles are placed a certain distance apart, according to the required length of the hammock. The thin slab of hard wood is then rapidly fashioned with the aid of a sharp machete into a "tonkas" or stripper. By the aid of this implement the fiber of the thick, fleshy heniquen leaf is dexterously denuded of its envelope and a wisp of "hatch-kil" or rasped fiber is the result. This is then placed in a position exposed to the rays of the sun for a few hours in order to bleach it. The bleaching process having been finished, the fibers, now called "sos-kil," are separated into a certain number, given a dexterous roll between the palm of the hand and the knees, and a long "bil-oach" or strand is produced. Two or more of these strands are then taken and by a similar dexterous manipulation converted into a "kan," cord, or "soon," rope.

From the "kan," or cord, the hammock is made.

The cord is "rove" rapidly around the two upright poles and the shuttle is then brought into play. This is generally the women's work, and they do their work well. The shuttle seems to move and seek the right mesh with a volition of its own, and in a very short space of time the hammock is made and laid with its kind to await the coming of the contractor.

MARKETING.

At certain intervals the contractor gathers up the hammocks thus awaiting him, and for which, it may be, he has paid for many months ahead, and taking them to Merida disposes of them to the merchants who have contracted with him. This state of affairs is generally brought about in this wise:

The hammock-makers, as a class none too provident, find themselves more than frequently in decided straits for money, and in consideration of money advanced by the contractor they agree to furnish him with a certain number of hammocks at such a time and price. The hammock-makers then are bound to the contractor.

But the contractor is generally a person of limited means, and while he must make the required advances in order to secure his stock of good hammocks, he has not the means to do so unaided. Accordingly he arranges a compromise with a certain merchant or merchants, who in all probability themselves have compromises, in this case called "credits," with some large New York firm.

After reaching the hands of the merchants in Merida the hammocks, both white and colored, are each classified into superior and inferior grades, are neatly and compactly baled in lots of four or five dozen to the bale, duly marked, and forwarded to the United States, which absorbs almost the entire exportation.

All of the districts of Yucatan produce more or less hammock, but that of Tixcoco is pre-eminently the hammock district, as it produces more hammocks than all of the other districts combined. Chemax hammocks, however, are noted for their fineness. Like the prime tea of China, the hammocks of Chemax rarely seek a buyer in the outside world, being eagerly sought for at home.

EXPORTS OF HAMMOCKS.

During the calendar year of 1895, twenty-four thousand hammocks were shipped to the United States from Yucatan. During the six months

just ended of the calendar year of 1886, over thirty-five thousand have been taken by the United States.

Until a better fiber can be produced elsewhere cheaper and more abundantly, and until machinery crushes out all competition, the nimble fingers of native women will keep Yucatan ahead in this line of industry.

EDWARD THOMPSON,
Consul.

UNITED STATES CONSULATE,
Merida, July 9, 1886.

AGRICULTURE, MINES, AND INDUSTRIES OF LA PAZ.

REPORT OF CONSUL VIOSCA.

Under the existing depopulated condition of this vast area of territory, the barrenness of its mountainous soil, its natural scarcity of rains and of the necessary sources of water, the almost total absence of this country's people exercising any industrial pursuits, living as yet in a very primitive social state, and the oligarchical political condition of the country's laws and government, being inadequate by far, from the advances of the present civilization, domestic life, actual necessities, and of the progressive occupations at large of the rest of the world's mankind, a very sterile margin is left in this case for making a report as desired.

AGRICULTURE.

Its products in Lower California are an insignificant mite compared with the States of Mexico. San José, Todos Santos, Santiago, Cadoño, Oro, and the frontier districts comprise all the lands susceptible of cultivation, these places being well supplied with means of irrigation, the character of the ground being alluvial, sandy soil, requiring very little fertilizing substances. These lands are generally owned by farmers who hold them under Mexican grants or quitclaim title, and, if under lease, \$50 per year is usually the rent for tracts of 100 acres, equivalent to 600 square meters.

Labor is generally performed under a different system from the common rule observed elsewhere, \$15 per month being the pay for each laborer, this amount being paid mostly in goods and provisions sold at exorbitant prices; and, with very few exceptions, cash is never given in payment.

The only method of arriving at a computation of the prices for labor paid in the several districts mentioned, and for their various productions and cultivations, is on an average in the sugar plantations of the Todos Santos district, distant 80 miles from this city, as follows:

Sugar or panocha.	Weekly wages.		
	Men.	Women.	Children.
Laborers for general cultivation	\$3 75	\$1 25	\$1 00
Laborers for milling, &c	2 50	1 25	50
Laborers for carting from the fields	3 00		

The sugar and panocha exported during the last fiscal year of 1884 to 1885 from the above districts to the Mexican Gulf ports and coast of Lower California correspond to: Panocha, 1,200,000 pounds, at 3 cents, \$36,000; sugar, 900,000 pounds, at 8 cents, \$72,000; besides other produce exported to the United States, such as oranges, sugar-cane, and panocha, value \$12,200; total value, \$120,200.

The following statement is an estimate of the cost market sales and net proceeds of a carga of sugar panocha from the Todos Santos district, at the La Paz market prices ruling this article during the said fiscal year of 1884 to 1885.

The panocha, or brown sugar, is made in small cakes and is generally packed in crates, two of which, weighing 300 pounds gross, are termed a mule cargo, but only contain 250 pounds of panocha.

Cost per carga of 250 pounds of panocha.

Cart-load of cane to the mill, per cargo.....	\$1 75
Cost of labor per cargo	1 72
Milling expenses.....	1 80
Incidental expenses.....	31
Freight to La Paz.....	2 25
Total	7 83
Current sales per cargo at La Paz prices	9 00
Net proceeds per cargo	17

The above price of \$8 per cargo is the highest figure; a great many small lots sold for two and two and one-half cents per pound, and even at lower rates.

The different kinds of tools used in this country for husbandry are the American plow, spade, hoe, shovel, ax, and hatchet, which comprise the principal implements, besides the Mexican machete or blade.

MILLING CANE.

Two steam mills have been erected and are in use in the said Todos Santos district, which were manufactured in the San Francisco, Cal., foundries; and in the districts of San José and Santiago, American machinery is also in use for sugar-milling; manufacturers and patentees of New York and Philadelphia.

Notwithstanding the different advantages offered by the late improvements in this kind of machinery, &c., a great many planters are still working their sugar-cane with the old system of wooden mills, with wooden cylinders moved by horse-power. Lack of capital is undoubtedly the cause that prevents farmers in this country from utilizing the new improvements offered in many of their branches of agriculture.

FOOD PRICES.

The subsistence of the Lower California laborer is plain, almost equivalent to fasting, not in the monastic order, but in the order of their habitual and frugal necessities. Corn made into flat cakes called tortillas, beans, fish, dry or jerked beef, panocha, and cheese constitute the nutritious elements which satisfy their appetites.

Thirty-seven cents per day, and not over fifty cents of market purchases, supply a laboring family in this country. The high retail rates

for other kinds of food, which are the following, are beyond the reach of a laborer :

Market rates.

Articles.	Price.	Articles.	Price.
Beef.....per pound..	\$0 10	Eggs.....per dozen..	\$0 37
Butter.....do....	68	Vegetables.....per pound..	8
Bread.....do....	5	Fruits.....do....	4
Tea.....do....	1 25	Sugar.....do....	40
Coffee.....do....	40	Panocha.....do....	6
Corn.....do....	2	Dried beef.....do....	12
Beans.....do....	7	Cheese.....do....	20

LABORERS' DWELLINGS.

Regarding the description and rent for dwelling places, with the exception of the owners or chief employers, who live in houses built on the Moorish system, which are probably more suitable to the warm climates, the laborers are generally allowed a spot of ground on the plantation, whereon a hut made of brushwood, weeds, palm leaves, &c., is built by them for covering themselves from the principal inclemencies of the weather, and no rent is attached for the occupation of tenancy.

MINES AND MINING PRODUCTS.

The peninsula was undoubtedly designed to be a mining country, and also that the local occupation of its inhabitants should be of that nature, for taking a topographical view of its mountain ridge, which forms a continuation of the Sierra Nevada Mountains of Upper California, and which crosses from Santa Catalina, at the northern part of Lower California near the junction of the mouth of the Colorado River, running in a direct line southeasterly towards Cape Saint Lucas, this entire barren range is interwoven with metallic veins of all descriptions ; for instance, the municipality of San José and Cape Saint Lucas is remarkable for its auriferous and argentiferous croppings exhibited on the surface of its mountains, which extend over to the municipalities of San Antonio, Triunfo, La Paz, and Cacachilas, all of which are argentiferous, iron, and other mineral substances.

The San Luis, Loreto, Comonduo, and Muleje districts, situated at the north of La Paz, abound in rich copper, and also in other metals, such as mica, iron, tin, and oxides of iron, besides gypsum, marble, alabaster, and grinding or sand stone. In Calmahi district to the north of Muleje, or better known by the name of Old Mission of Santa Gertrudis, are gold-diggings discovered about two years ago, rich auriferous veins crossing its mountains and gulches.

Solid mountains of iron exist in a place called Carmel, within 10 miles of the Old Mission buildings ; San Borjas, Rosario, and San Fernando missions, to the north of Calmahi, being also noted for gold-bearing veins, silver, and principally copper ore. The frontier district of Lower California is noted for its gold-diggings and gold-ledges, mica, and other mineral substances, such as sulphur, soda, and salt, all of which are well known to some of the American capitalists who own largely in mining interests there.

As an example to fill the second interrogatory—*products of mines*—the most extensive and important works which can be materially produced is the system by which the Progreso Silver Mining Company's mills and works are carried on at Triunfo.

Two of the company's principal mines, the Hormiguera and Morroña, are now in a bonanza of ore, averaging about \$55 per ton of silver.

Other substances, such as antimony, lead, iron, sulphur, arsenic, &c., are not extracted, but are left to run with the tailings.

The present depth of both mines is, in the main shaft, about 820 feet, and by cross-cuts or a tunnel of 1,200 feet long they communicate with each other; hence as yet they have not experienced any want of ventilation.

The Marroneña mine has an incline shaft communicating with the main shaft of the Hormiguera mine, which creates a sufficient current of air.

The working method is by milling the ores under the lixiviation process.

The following are the products per ton of ore from said mines:

Assay value per ton of ore	\$54 82
Cost of mining per ton	\$4 86
Carting and selecting	3 75
Sacking and hauling to mill	2 38
Milling, roasting, fuel, labor, &c	15 50
	26 49
Net product	
	28 33

The machinery in use is of the most improved patterns known in mining, and is mostly manufactured in the United States and England.

Wood constitutes the principal fuel for running the mill and works; cost per cord of 128 feet, \$6.50 delivered.

The wages paid are as follows, day or night gangs (*paradas*) of twelve hours each:

Miner (<i>barriletero</i>)	per day ..	\$1 50
Boys	do	75
Furnace men	do	1 00
Contract work	per ton ..	5 50
General workmen	per day ..	1 25
Teamsters	do	75
Machinists	do	2 50
Carpenters	do	2 00
Assayers	do	5 00
Assistant assayers	do	2 50
Watchmen and other attendants	do	75

The cost of mining by the unit, as requested, is very difficult to ascertain, as mining is always subject to irregularities, consequent on the nature of the metallic veins and method of working them.

The Progreso Company owns, besides the above-mentioned two mines, sixteen others of equal importance, but all are not fully operated.

No smelting furnaces have as yet been erected in the country. The oxides of iron in combination with antimony and other metallic substances in the ores, besides the absence of lead, will not permit smelting.

Neither royalties nor taxes are attached to mining pursuits, either by general or local laws.

In substance, the above are the only two topics in this country to make out an imperfect report from, and in reference to the interrogatories contained in the stated circulars, all of which I beg to respectfully submit to the Department, not as being one that conforms with its forms and meaning, but such as the present industrial condition of the country permits.

JAS. VIOSCA,
Consul.

UNITED STATES CONSULATE,
La Paz, Mexico, December 12, 1885.

THE SILK INDUSTRY IN MEXICO.*REPORT OF CONSUL-GENERAL PORCH.*

Having received numerous inquiries from parties interested in the culture of silk, I have compiled the following facts, figures, and tables on that industry in this Republic, which, by the way, promises to be a very important one in the near future.

The places where silk-worms are raised are Oajaca, State of Oajaca, Tetla, State of Puebla, Ixmiquilpan, State of Hidalgo. The business has also been introduced into the States of Jalisco, Tlascala, Michoacan, Queretaro, Vera Cruz, and Chihuahua.

It is believed that in the course of the next five years more silk will be manufactured in Mexico than can be consumed by her people, although at present the industry is in its infancy, comparatively speaking. There are now three or four well-equipped factories in the Republic, and the raw material produced is still insufficient to supply the demands. Chinese silk, in skeins, is yet being received in large quantities from London. One very encouraging feature here is the cheapness and efficiency of the labor, women receiving $37\frac{1}{2}$ cents per day, men \$1, this being the average; women are preferred for the work, because in this extremely interesting business great delicacy, nimbleness, and neatness are essential.

It is claimed, by those in a position to be well informed, that silk can be manufactured here for one-half of what it costs in Paris.

Messrs. Chambon & Bro., the proprietors of the largest factory in the Republic, employ about seventy-five operatives, men and women. They have eight spinning-lathes for silk cocoons. The factory turns out about 30,000 pounds of silk per year. They inform me that their silk is of an inferior quality, owing in a great measure to the fact of its being a new industry, and for the further reason that they have, up to this time, been compelled to use skeined silk largely, but that in a short time they will manufacture brands equal to the best on the market. They seem very enthusiastic over the prospects and claim that this climate is not excelled in any part of the world for the raising and development of the cocoon. They also propose, by degrees, to manufacture the 480 different shades of color known in the silk thread market, but not until silk-worm cultivators in the vicinity of the factory can supply their demands, which, from present indications, they will soon be able to do.

A company of fourteen persons in the State of Hidalgo, as well as other individuals in other States, are raising silk-worms from eggs furnished, and report excellent progress, coupled with the promise to commence to supply the demand soon. The machinery in use is all imported from France. Although the factories are small, they are well equipped and in the hands of competent men. In rearing silk-worms obstacles have been met inherent to every new industry, but an exceedingly fair result has been obtained. No sickness has presented itself among the worms and the losses of those under treatment for unavoidable causes have only been 5 or 6 per cent.

The following is a summary of the rules and precautions that should

be observed in rearing silk-worms, arranged in accordance with observations of gentlemen of long experience in the industry:

GENERAL PRINCIPLES OF REARING WORMS.

The principal conditions of success that must be attended to by a raiser of silk-worms are—

- (1) The seed, as the base of operations, must be good.
- (2) Perfect incubation.
- (3) The greatest possible simultaneousness in arriving at all the stages, and especially a convenient distribution of the worms in the frames.
- (4) Healthy and sufficient feed.
- (5) Always pure atmosphere, obtainable only by frequent changes of the beds or frames, and great cleanliness.
- (6) Doors and windows must be kept open during the day and closed at night.

INCUBATION.

Up to the time of incubation the eggs must be kept in a dry and well ventilated place, where the temperature does not rise beyond 12° C. (Celsius).

As soon as the mulberry trees bear leaves of the size of a nickel or one-cent piece, the worm-seed must be put into the incubator below the apparatus.

Incubation must commence at a temperature of 21° C. Then the eggs turn white, presenting a black point in their surface. At 24° C. the first precursory worms become visible. At 25° C. those alive are still weak. At 27° C. the development of the worms is, during three days, very rapid, and every hour or half an hour, according to necessity, the worms must be gathered by means of tulle nets, on which mulberry leaves are spread in small pieces.

WORM-SHOPS.

These should be situated as near as possible to the mulberry plantation, avoiding carefully the proximity of the focuses of infection, such as manure heaps, pools, tanks of standing water, and swamps.

The shop must be supplied with much light by means of doors and windows, especially towards the north, to insure the necessary ventilation, taking care not to expose the worms to the sun-beams, which annoy and incommode them. Doors and windows may be covered with some cloth or curtains, made of sheeting, to keep out birds and noxious insects.

ARRANGEMENT OF THE SHOP.

The various frames made of shingle cones and sackcloth are least costly. The air must circulate without obstruction through the frames, which must not be too broad (1.30^m to 1.50^m at most), so that two persons fronting each other may perform the service without difficulty.

The frames should be placed above each other at a distance of 0.40^m to 1.50^m , leaving a breadth of about one meter for the passages between the rows.

The feet or props of the frames must be inside of a tin dish full of water, to protect the worms against insects and ants, &c.

CLEANLINESS OF THE SHOP AND SELECTION OF THE OPERATIVES.

The cleanliness of the shop cannot be recommended too much; it must be swept after the distribution of each meal, in order not to walk on the dropped leaves, and in sweeping care must be taken never to raise dust, which is avoided by making use of a wet rag.

Regarding the internal service of the shop, we maintain that women generally are preferable to men. The silk-worm requires, especially during the first stages of his short and fragile existence, as much abnegation as is necessary, we may say, to attend to children or sick persons. Now, then, as far as care, solicitude, and abnegation are concerned, women are always superior to men.

LEAVES AND FEED.

It is necessary to avoid carefully that the worms be fed with leaves that are too fresh, wet from dew or rain, or hot leaves. All these inconveniences can be avoided by keeping a fair supply of provisions on hand. The leaves can be preserved one day by keeping them in a cool and rather dark place. All that is necessary is to shake them thoroughly from time to time, to avoid fermentation. They must be gathered always an hour or two before feeding. The feed, consisting of leaves cut into small pieces at the very moment of distribution, must be light and frequent, especially in the first stages, and must be distributed on the frames in a regular manner. In fact it must be proportionate to the atmosphere in which the worms are reared; that is to say, frequent and abundant in an elevated temperature, while limited and less frequent in a low temperature. The leaves must be cut into pieces until the end of the second stage, and may be served entire in the following stages. While passing from each change the feed must be less abundant.

CHANGING THE FRAMES.

This operation consists in removing the worms from the offal or excrement liable to affect their health by reason of the dampness and the miasma arising therefrom.

For this purpose and at the time of distributing the feed, sheets of perforated paper are used of 0.30^m by 0.45^m, which are put over the worms. Mulberry leaves are then spread over this paper, and immediately they are seen passing through the holes to eat. As it may happen, however, that some worms only pass their heads to take feed, it becomes necessary to wait until a second meal has been served, then all the worms are on the paper, and if any remain in the dirt they must be thrown out, as they are likely to besick. For changing the frame the perforated paper is raised by the edges and put on a suitable box, which is carried to a thoroughly cleaned frame, where it is left, causing it to slide from the box, the worms remaining below, without touching or hurting each other.

FORMATION OF THE BRANCHES OR HUTS.

This operation consists in putting branches over the frames in such a manner as to form huts, in which the worms spin the cocoons. Branches of the plant known as "coal vender's broom" (*senecia* sp.)

are cut before the stage of ascending the branches, so as to have time to dry. They are cut about half a meter long and as leafy as possible. If those intended to be used have any bad smell they are washed with chlorate of lime dissolved in a bucket of water, and then they are dried and well shaken. With these branches the huts are made.

On the eighth or ninth day following the fourth change the worms begin to ascend the branches. At the first indications the huts must be formed, as it is better to finish this operation a few hours too early than be taken by surprise.

FORMATION OF THE COCOON.

When, after having ascended the branches, the worm has selected a suitable place, it begins to work. At first it throws silk thread around it, which represents the foundation of the edifice. Then it fastens this thread to the surrounding branches; it is really seen clinging thereto by means of its false feet. There it deposits a drop of silky gum, which it passes through the holes of the lines of thread, throwing the head backwards. In this manner the gum is extended and forms two threads, which immediately unite in one that hardens in contact with the air.

Repeating this vibratory motion all the silky gum is divided, similar to a ball of thread, without interrupting the line formed.

The activity of this little insect is so great that three or four days are enough to carry its gigantic and admirable work to a successful issue.

COCOON CROP.

The cocoon is ready on the fourth day after the ascent, if not sooner, but as not all worms commence work at the same time, the cocoon crop does not take place until the sixth or seventh day after the ascent; that is, about sixteen or seventeen days after the fourth change.

The cocoon crop occupies two operations:

- 1st. Removing the cocoons from the branches.
- 2d. Depriving the cocoons of the thread with which they were fastened to the branches.

ILLUSTRATIONS.



FIG. 1.—Incubator of osier.

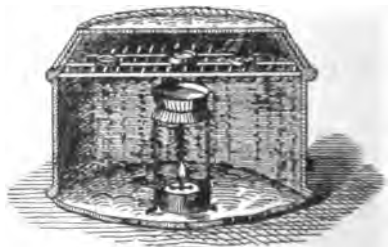


FIG. 1.—Section of incubator.

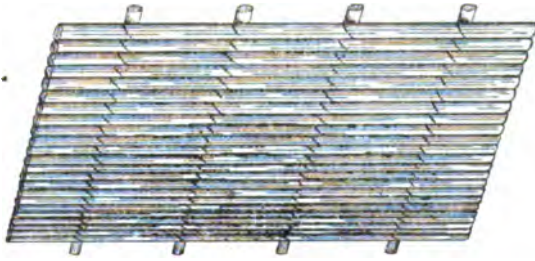


FIG. 2.—Frame made of cane.

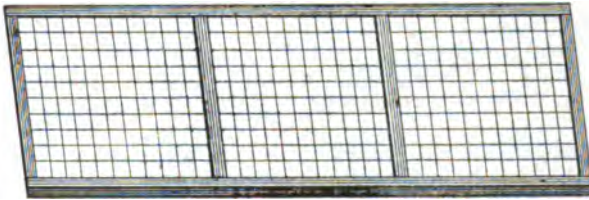


FIG. 3.—Frame made of cloth.

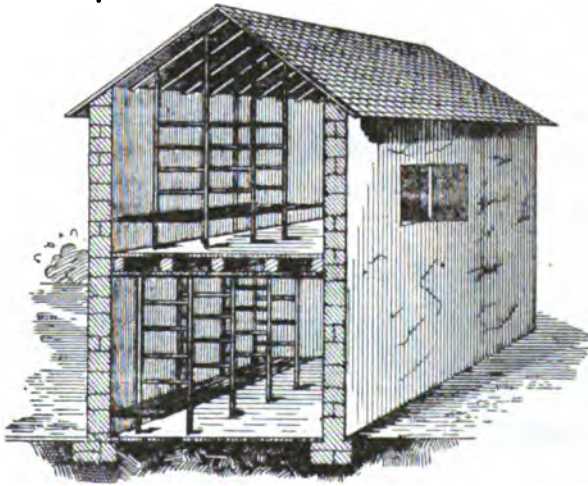


FIG. 4.—Position of frames in fixed stories.

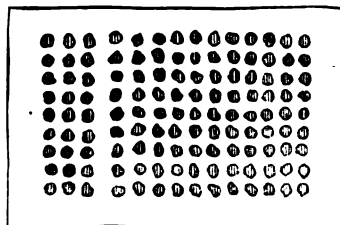


FIG. 5.—Perforated paper.

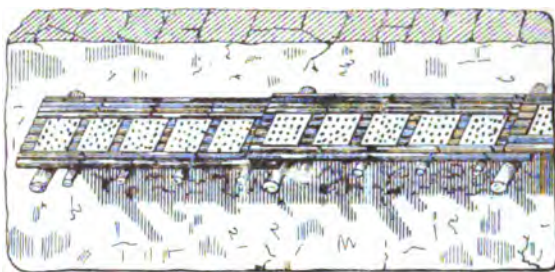


FIG. 6.—Position of perforated paper on the frames after cleaning is done.

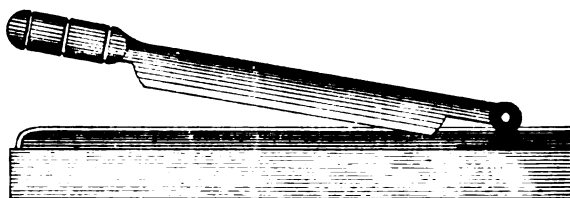


FIG. 7 —Leaf cutter.

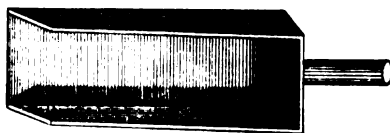


FIG 8.—Little box to clean frames.

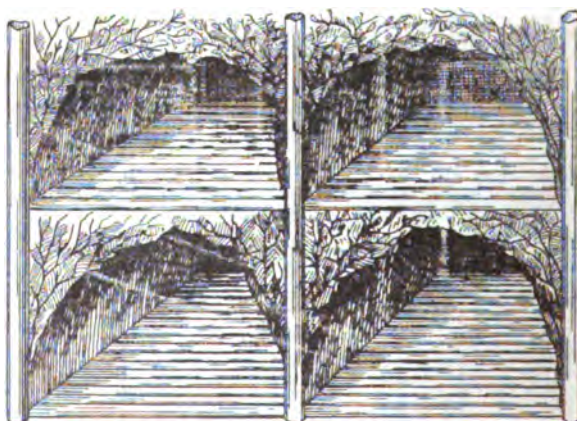


FIG. 9.—Huts of branches.

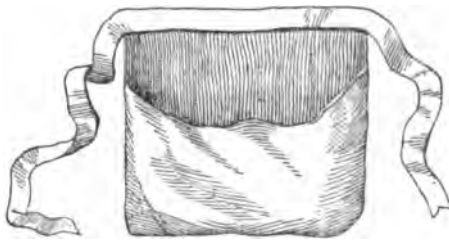


FIG. 10.—Sack for leaves.

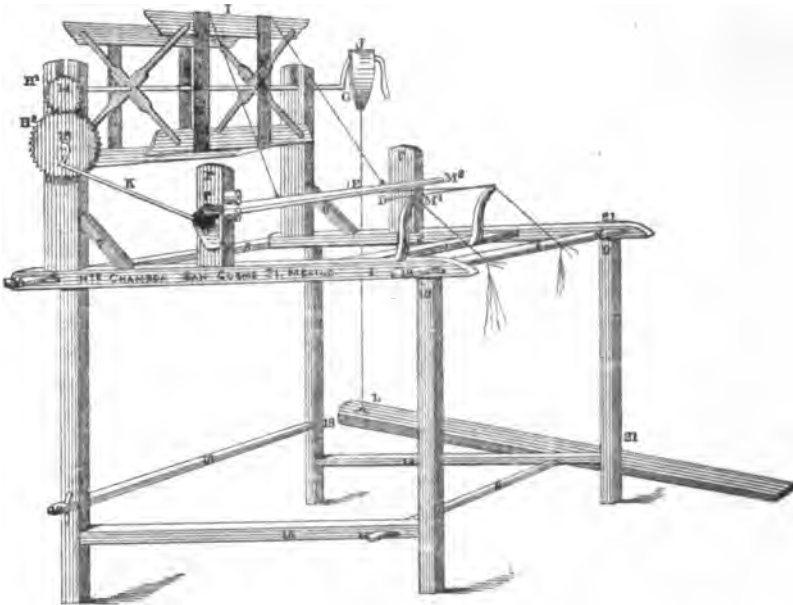


FIG. 11.—Lathe for spinning cocoons.

The following table and cuts show the successive stages of development of the silk-worm, with observations as to care and feed :

Stages.	Days.	Daily cares, meals.				Observations.	Weight of leaves for 10 ounces.	Surface for 10 ounces.	Number of persons employed per day for 10 ounces.
		Morning hours, 5 and 10 o'clock.		Evening hours, 4 and 9 o'clock.					
I.	1								
	2								
	3								
	4								
	5								
	6								
II.	7								
	8								
	9								
	10								
	11								
	12								
III.	13								
	14								
	15								
	16								
	17								
	18								
IV.	19								
	20								
	21								
	22								
	23								
	24								
	25								
	26								

Development of worms. Temperature 20° and 22° (Celsius).	Daily cares, meals.				Observations.	Weight of leaves for 10 ounces.	Surface for 10 ounces.	Number of persons employed per day for 10 ounces.
	Morning hours, 5 and 10 o'clock.		Evening hours, 4 and 9 o'clock.					
I.	1							
	2							
	3							
	4							
	5							
	6							
II.	7							
	8							
	9							
	10							
	11							
	12							
III.	13							
	14							
	15							
	16							
	17							
	18							
IV.	19							
	20							
	21							
	22							
	23							
	24							
	25							
	26							

Development of worms. Temperature 29° and 22° (Celsius).

A. E.
"A." egg. "E." worm coming into life.



Before first change.



Before second change.



Third change.



Commencement of fourth.



Fourth change.

WHITE AND BLACK MULBERRY LEAVES.

Information regarding the localities where white and black mulberry trees exist according to the last reports received up to date, is as follows:

STATE OF PUEBLA.

Both varieties are found in almost every district of the State. They are officially reported from those of Zacatlan, 100,000 white, Tatulta, Jonotla, Tuzamapa, Tepeji, and Tetela, towns of Tetela and Cuartempan.

STATE OF OAJACA.

Many districts have both species. Official reports cover the following: Timatlan, 6,000; Etla, 6,000, Ocotlan, Huajuapán, Yautepec. The tree grows almost without cultivation in those of the Centre Ejutla, Miahuatlán (red kind), Nochistlan, Tlajiacó, Tepascalula, and Tlascala.

STATE OF TLASCALA.

A limited number of trees are known to exist in several localities of the districts of Juárez, Hidalgo, Zaroza. Most of the trees are of the black variety.

STATE OF MICHOACAN.

This State has sent little information, with meager details. The black varieties seem to be more abundant than the white. Only the district of Uruapan has reported the number of 2,190 in the following places: Uruapan, Los Reyes, Taretar, Peribar, Taucitaro, and Tingambote. The district of Zamora has 900 at Tangancicuoro. A nursery near Uruapan has, furthermore, 3,000 plants.

STATE OF ZACATECAS.

This State has reported few trees; nearly all of the black variety. They are found at Neives, Rio Grande, San Miguel, and San Juan.

STATE OF HIDALGO.

The mulberry trees seem to flourish abundantly in this State, but, owing to the vague information received up to date, no precise number can be given. Both varieties exist in the districts of Ixmiquilpan, Jacala, Malango, Mextitlan, and Tula, while the black grows in those of Hidalgo, Actopan, Huichpan, and Huejutla.

STATE OF VERA CRUZ.

The only districts that have replied to the inquiries sent out are those of Orizaba and Huatusco, without giving names of localities and number of plants. The great coffee plantation of Mirador, owned by a German merchant, has the capacity for producing an immense number. It is situated about 50 miles from the port of Vera Cruz, and at an elevation above sea level that places it beyond yellow-fever district.

The information received from several States, such as Jalisco, Durango, Guerrero, Queretaro, Sonora, &c., is so meager that it hardly deserves mentioning. From other States no information whatever has been received, owing to the fact that the inquiries were sent recently, and no sufficient time has elapsed to obtain the data requested. For the same reason this entire synopsis is limited; but it is hoped that in collecting the information hereafter a more satisfactory result may be obtained.

DECREE FOR THE ENCOURAGEMENT OF THE SILK INDUSTRY.

Translation of decree issued by the governor of the State of Puebla, Mexico, under the authority of the legislature of that State, dated March 30, 1886.

Rosenda Marquez, constitutional governor of the free and sovereign State of Puebla to its inhabitants:

Know ye that the legislature has transmitted to me the following decree:

The eighth constitutional legislature of the free and sovereign State of Puebla has decreed as follows:

ARTICLE 1. A subvention of one dollar for each kilogram of silk produced during the first year, and of fifty cents for each kilogram produced during each of the following years, is hereby granted to the inhabitants of the State, who, within its territory, dedicate themselves to the culture of silk.

ART. 2. The tracts of land that are solely and exclusively devoted to the planting of mulberry trees become thereby exempt from all contributions in the State for five years, as long as, during this period, the mulberry plantations are preserved.

ART. 3. Those persons who gather a crop of more than 100 kilograms of silk during the years in which they receive subventions will deliver to the State Government or its duly authorized representatives 100 grams of silk-worm seed, and 200 saplings of mulberry trees.

ART. 4. The evidence of being entitled to the subvention granted by this law must be presented to the general treasury, which will, through its respective revenue collectors, obtain all the information considered convenient, and in accordance with the reports of the aforesaid general treasury the orders of payment will be issued by the State treasury.

ART. 5. The first factory of spun and woven silk goods established in the State and judged by the executive to offer fair prospects of stability shall receive a subvention of \$5,000.

ART. 6. The decree of July 24, 1883, is hereby repealed.

The governor will cause the foregoing decree to be published, circulated, and complied with.

Given at the State capital, Puebla, March 29, 1886.

M. A. SALOS,
President of Deputies.
CLITO M. OLEVARES,
AURELIO MADRID,
Secretaries of Deputies.

Accordingly it is hereby ordered to be printed, published, and circulated for its purposes.

EXECUTIVE CHAMBERS,
Puebla, March 30, 1886.
ROSENDA MARQUEZ.
A. PEREZ MARIN,
State Treasurer.

JAMES W. PORCH,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Mexico City, June 17, 1886.

MEXICAN COTTON.

REPORT OF CONSUL MACKEY, OF NUEVO LAREDO.

INFLUENCE OF THE RAILROADS.

The district of the Laguna, in the State of Coahuila, is the great cotton producing region of Mexico, and furnishes to her factories annually from 30,000 to 40,000 bales.

Prior to the construction of the great railways from the north the price of Mexican cotton varied from 13 to 15 cents, and in the home market competed successfully with the product of the United States.

Cotton was then imported from Texas in carts and wagons through Nuevo Laredo and Piedras Negras to the interior.

The difficulties encountered in the transportation of so bulky and heavy a commodity by means so primitive can be easily imagined.

The cost of transportation from San Antonio to the frontier was excessive, the passage of rivers difficult and expensive, loading and unloading were attended with additional charges; and these things, combined with the delay and loss of time involved in such shipments, hampered the importation of cotton from the United States, and in a proportionate degree fostered and encouraged its cultivation in Mexico.

Under favor of these circumstances, the cultivation of cotton became one of the most profitable branches of agriculture, and extended largely and rapidly, so that in a few years Mexico must have produced a sufficient quantity to wholly supply her own factories.

The completion of the railways leading to the United States prejudiced the market and greatly diminished the production of cotton in Mexico, as cotton could now be imported without the expense and delay that were hitherto unavoidable.

The Mexicans complain that the advent of railways has not only injured the producers of cotton at home, by facilitating the importation of American cotton in the degree necessarily the consequence of cheaper and quicker means of transportation, but that, by special and personal rates of freight, the railways have discriminated against Mexican producers.

In proof of this assertion they allege the fact that the cost of transportation of merchandise from one Mexican city to another—for instance, from Laredo to Leon or Queretaro—is greater than from New Orleans or Galveston to the city of Mexico. While it is undoubtedly true that freight charges between the interior cities of Mexico are higher than those from points in the United States to that country hundreds of miles more distant, this is not attributable to intentional discrimination against Mexican products, but to the fact that the undeveloped resources of Mexico being insufficient to maintain the traffic necessary to the existence of the railways in question, foreign aid must be courted and obtained by the concession of special rates of freight.

The effect of this reduction in favor of foreign cotton has caused Mexican cotton to fall in the market to eleven or twelve dollars per hundredweight, at which price the profit of the producer is so insignificant that the cultivation of cotton is discouraged or prevented. The following is the mode of cotton cultivation in the Laguna:

CULTIVATION OF COTTON.

The dry stalks of the preceding crop are first removed and burned, and the mules then enter to break up the earth.

The first plowing finished, the plow is again passed over the soil in a transverse direction, and heavy branches of trees are dragged over the soil to remove inequalities and prevent the formation of crevices.

This preparation of the earth is made from November forward after the gathering of the crop.

The ground is now ready for the seed, unless disturbed by rainfalls.

The season for sowing begins with March and ends with the last of April or the first of May.

If in the interval between the breaking up of the earth, as before described, and the season for planting there should occur a fall of rain, the harrow of large branches is again passed over the soil, and should the fall of rain be excessive it becomes necessary to again break up the earth and prepare the ground anew.

The cotton is usually planted in furrows from 2 to 2½ yards apart. By some the plants are trimmed in the month of August, and this pruning is thought to produce a large crop.

Cotton brought from the United States and planted in Mexico usually produces a plant a yard or a yard and a half in height for the first season.

As the plant becomes acclimated its proportions increase, but this increase in altitude and dimensions is accompanied by a diminished yield of cotton.

While American cotton begins to yield its crop in July, that of Mexico is not gathered until September. The cotton is gathered by hand, the laborers receiving for their work 12½ cents per arroba (twenty-five pounds). The fiber is removed from the seed in the same manner as in the United States, and by gins of American manufacture.

The fiber of Mexican cotton is larger and not so soft and lustrous as American, but cotton production in this country possesses this signal advantage, that for several succeeding seasons the plants continue to bear profitable crops, while in the United States the soil must each year be enriched with fertilizers and the seed renewed.

Factories for the manufacture of cotton goods exist at Monterey, Saltillo, Parras, and many other cities of Mexico, the greater part of them in a prosperous condition.

BECKFORD MACKEY,
Consul.

UNITED STATES CONSULATE,
Nuevo Laredo, Mexico, May 20, 1886.

CHOCOLATE AND RUBBER IN MEXICO.

REPORT OF CONSULAR AGENT BREWER, OF SAN BENITO.

The rainy season has commenced earlier than usual this year; as a consequence corn is well advanced and the full-grown trees on the coffee plantations are well loaded with blossoms and berries. The cotton plantations, limited in number, show good promise of an abundant crop. Rice is coming on well. In fact there is every promise of a full crop of

all the necessaries of life, as well as the staple products which could be grown in abundance here, but which, unfortunately, are only raised on a limited scale.

Like other regions of Spanish America, Soconusco, although blessed with the richest soil and favored with an unexcelled climate, is suffering from a lack of hands to open up the country and make it what nature intended this district to be—a garden spot capable of supplying the United States with many of the imported luxuries and necessities. Soconusco is in urgent need of immigration. Could this district once be developed on a scale commensurate with its natural richness, the yearly exports, now comparatively insignificant, would be swelled to proportions never dreamed of.

CHOCOLATE.

In her chocolate alone Soconusco has an element of untold wealth. The chocolate bean is worth here 20 cents per pound. It is no exaggeration to say that in flavor and natural richness the Soconusco chocolate is far ahead of any class at present introduced into the United States. Once the merits of this bean are recognized the United States would draw its chocolate supply almost exclusively from this favored province; at present, however, Soconusco hardly produces more than enough to supply the home demand. I know of few better openings than that offered by the growing of the chocolate tree on a large and systematic scale. There are many elements favoring the development of this branch of industry; there are good and regular steamer communications with San Francisco and with New York, via Panama; there is a uniform climate; and, what is of more importance, an abundance of land, awaiting the hand of the industrious immigrant, eminently suited for the growing of the chocolate bean.

RUBBER.

There is another article which could be largely exported from here, but which is yet an industry in its infancy. I refer to the rubber tree. This tree finds in Soconusco a natural home. The unwise methods of the past, by which trees have been chopped down and totally destroyed by the ignorant natives, have done much towards decreasing the annual supply of this valuable article of export. Added to this, the unusually dry season last winter was conducive to the starting of many fires in the dry underbrush, which have killed many of the large trees, and it is feared burned up most all of the smaller or young saplings. This year's supply of rubber, consequently, will be smaller than ever. In this connection I would mention, to those who can afford and are willing to wait, the chances offered in the starting of young rubber plantations, that the tree, after having once fairly started, requires little or no attention, and from six to eight years from the seed will produce abundantly of the milk, which is either dried by sun or smoke until it becomes hardened and ready to be worked.

LEWIS R. BREWER,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
San Benito, June 1, 1886.

MANNER OF EXTRACTING SILVER FROM ORES IN MINES OF MEXICO.

REPORT OF VICE-CONSUL WINSLOW, OF GUERRERO.

In Cedral, State of San Luis Potosi, are situated a number of *haciendas* (works) for extracting silver from the ores taken out of the mines, situated at the Real of Catorce, 24 miles distant, amongst the mountains, 7,441 feet above the level of the sea. The crude mineral is brought down from the mountains to Cedral on the backs of mules, in *zurrones* (bags) made of untanned beef hides, each mule carrying 300 pounds, or a *carga*, 150 pounds on each side. These ores on account of the scarcity of water cannot be "benefited" in Catorce; they are therefore brought to Cedral, where there is a sufficient supply. In the neighborhood of all the mines in Mexico there are *haciendas de beneficio*, or works for extracting the silver from the ore, but as the process is the same in all, it is sufficient to describe one. The building in Cedral is 300 feet long, made of adobe, and back of it, forming a square of the same length and width, is a court-yard. In front there is a large door-way for entrance, where nobody is allowed to enter without previous permission. The hacienda is directed by an administrator, who has his officials and clerks, and directs the establishment. The peons or workmen gain from 75 cents to \$1 a day, and are paid off at the end of each week.

TREATING THE ORE.

The ore as it is brought from the mine is in large pieces; this is piled up in the court-yard in a huge pile, and does not look as if it contained any mineral, but like so much red stone. It is in the first place put into an inclosed box, and pounded to pieces by immense wooden pounders, armed on the end by iron pestles, which are lifted up by arms connected with an axle, which is turned by mules. The ends of these arms fit into a notch in the pestles, and lift them up a certain distance, and then the end of the arm slips out of the notch, and the iron pestle falls down with an immense force upon the mineral, and comminutes it into small pieces. These fall down upon a sieve made of hide, and the smaller pieces fall down through the holes in the sieve, and the larger pieces are thrown back under the pestles to be again crushed. There are several of these pestles in a straight line, connected with the same axle, and they are lifted up alternately.

After the ore is pounded to pieces in the mortars (*morteras*) it passes to the *tahones* or mills, which consist of a round vat, placed on a level with the floor, where the metal is ground up into a fine mud (water being added), by means of three heavy and hard granite stones, of an oblong shape, which are tied to the arms, connected with a revolving axle turned by a mule, which walks around in a circle, blindfolded. Into holes made in the stones, sticks are introduced, and these are connected by means of ropes or chains to the revolving arms. There are several of these circular vats, all situated in a line in a long room, each worked by a mule blindfolded. These are called *tahones*, and the crest-pole in the middle, *peon*, with its two *brazos* (arms) of wood, from which are suspended the heavy stones called *metapiles*, or crushers.

From here the ore, looking like so much mud, is thrown out into the *patio* or yard, which has a floor well made of some hard cement or stone, and here are added quicksilver and salt in a liquid state, or *caldo* (soup) as it is called. It is thus left in the open air, exposed to the heat of the sun, some twenty or thirty days, and is stirred up every day or two by the feet of men and horses, who walk around in a circle until the quicksilver and salt are well incorporated with the ore. When this process is completed the mud thus mixed is called *torta de lama* (cake of mud). After the ore is thus worked or brought to a proper state it goes to the *lavadero* (washing place) called *tina* (vat), which is round and made of wood and stone, where the silver is separated from the earth, and here is where the *tortas de lama* (piles of mud) are taken from the yard, and here remains after the mud is washed out what is called the *plata piña* (amalgamated silver), containing quicksilver: this amalgam is then put into stout canvas bags and submitted to a heavy pressure to get rid of the mercury, and afterwards it goes to the furnace, where the silver is purified of all foreign substances.

ANOTHER METHOD.

There is an additional process, which is pursued with certain kinds of ores. After the mineral has been exposed to the sun in the *patio*, or yard, it is transferred to the *planillo*, which is an inclined plane in the open air, having a solid stone floor some 60 feet long and 20 feet wide. At the foot of this sit a number of nearly naked men, who occupy themselves by throwing water gradually on the mass of mud by means of pieces of ox horn, so that the mud flows off, and runs outside of the yard in a ditch, and the silver with some mud is left at the foot of the inclined plane. This requires a great deal of skill, as the water must be thrown on gradually. After this process, the greater part of the mud has flowed off and only a small portion remains, which contains the silver. This mud is then removed to a room in the second story, where it is placed in the *criso*, a large round iron boiler, with fire underneath; water is added, and it is stirred up by means of revolving arms worked by a mule, and the remaining mud flows off, only a small portion remaining. The rest of the process consists in removing the remaining substance to the amalgamating room, where quicksilver is added, which unites with the silver in the mud, and then this is further washed, and only the quicksilver is left united with the silver. This is further purified in a furnace and the silver runs off into molds, and is then sent to the mint at San Luis Potosi to be coined.

There are different kinds of ore: one which is merely exposed to the fire of a furnace, and this is called *fundicion* (fusion), and another of the *patio*, or yard; the latter is put through the process I have described. One kind of ore goes to the *patio*, and from there to the *lavadero*, and another goes to the *planillo*, and from there to the *criso*. The white and green silvers are put through the process of the *patio* and the *criso*; the *bronces* (bronzes), *plomeros* (containing lead), and those mixed with other minerals are extracted by the *patio* and the furnace.

The processes used for extracting the silver are very crude. No one thinks when he has handled a silver dollar how much trouble it has cost to make it. From three hundred pounds of crude metal only three to eight ounces are extracted. Some of the richer ores, after being ground up, are mixed as before with mercury and salt, and then made into *tortas*, or piles, some six feet in diameter, and an Indian, bare legged, commences in the middle and walks around regularly,

placing one foot before the other, by a peculiar movement, and leaves not a single particle unstamped, and keeps this up all day. The object of this is to unite the crude mercury with the silver. These men are paid three bits a day, 37½ cents.

KINDS OF ORE.

There are three different principal kind of silver ore extracted from the mines, according to the kind of metal with which they are combined, although there are other varieties. For example, we have *plata blanca*, or white silver, which is the purest and the rarest. In this variety the silver can be seen resting on the surface of the stone. *Plata verde* (green silver); this is also a rich variety. The silver is here united with copper, and the veins of blue and green in the ore are the silver with the copper. *Las bronzes* contain silver, but in a less quantity, united with iron, which looks like brass or gold, and would deceive an ignorant person. *Plomosas*, where the silver is united with lead, is scarce, and almost unknown in Cedral, but is the most common at other mines situated in Nuevo Leon, such as Ballecilla, Cerralvo, Villaldama, &c. All the different kinds of silver are called *azogues*, or quicksilvers, referring, probably, to the amount of quicksilver necessary to extract the silver from each. There are also *caliches*, or chalks, which are rich in silver and are the most common here, although the earth looks like common white limestone. Most of the mines have *haciendas de beneficio* (extracting works) for extracting the silver, situated at some distance from the mines.

When the products of the mines are rich, money is plenty, as the workmen get a certain share of the ore they get out, but when the veins give out, everybody becomes poor and the men go elsewhere to work.

A PRIMITIVE MILL.

At the Maroma, 24 miles from Catorce, amongst the mountains, water-power is used for grinding the ore. The mill consists of a solid wall of masonry, forming a channel through which flows a stream of water. Inside of this channel there is a wheel placed horizontally, which has a number of flat boards shaped like spoons fastened around it outside to catch the water. This wheel is connected to a perpendicular pole by four arms. Inside of the wheel there is a round inclosure of masonry, in which the ore is ground by means of the *metapiles*, or crushers. These, as before mentioned, are huge, heavy stones, made of granite, somewhat oblong in form, and into each of these a hole is bored and a stick introduced, and this is fastened by a chain to arms connected to the perpendicular pole. The pole, being connected with the wheel by arms, turns in a socket at its bottom, and thus turns also the *metapiles*, which are also connected with it by other arms. These are the most primitive mills I have ever seen, and are probably as old as the times of Columbus, but they do their work very well, and at least dispense with mule power.

The object of writing this article is to manifest to our manufacturers at home what a wide field lies open in Mexico for the introduction of machinery for crushing ores and extracting the silver. Although I have visited a number of mines in the States of San Luis Potosi and Zacatecas, these primitive methods I have tried to explain are the only ones I have ever seen used for the extraction of silver. By these methods a large part of the silver is lost, and it has even been found profitable to

work over the mud that has been thrown away. It is to be hoped that since the introduction of railroads our manufacturers of steam-engines and of machinery for reducing ores will not lose the opportunity to be first in the field.

UNITED STATES CONSULATE,
Guerrero, May 28, 1886.

CHARLES WINSLOW,
Vice-Consul.

AGRICULTURAL MACHINERY IN MEXICO.

REPORT OF CONSUL-GENERAL SUTTON, OF MATAMOROS.

In a report which I made under date of June 23, 1884, and published in Consular Reports No. 48, for December, 1884, I gave detailed information on this subject. Since that date a large increase has taken place in the imports of American agricultural implements. I have not as yet been able to obtain exact figures as to the imports, but from careful observation I am satisfied that the value of the imports of these articles for the two years ending June 30, 1886, will equal if not exceed that for the ten previous years. There is a genuine awakening on this subject in Mexico. To be sure, in so large a country as Mexico this is only a beginning.

For the past five years this country has suffered a severe and continuous financial depression. In this particular section the through transit trade has been turned to other points and the local imports diminished. One result has been to drive people from the cities to cultivate gardens and fields and breed animals. Like all of Northern Mexico, Tamaulipas is mostly fit for grazing. But in the valley are considerable quantities of land which might easily be tilled. *Hacendados* and *rancheros* are now more generally turning their attention to improving their methods of cultivation. In many sections are small forests where a plantation saw-mill plant would be of great service. In other localities small flouring and sugar mills are needed. American catalogues of these articles, especially if in Spanish, illustrated and with prices, are carefully consulted. To enable those dealers in the United States who sell these goods to reach this class I have made out the following list of *hacendados*, *rancheros*, and others interested. The list is comparatively complete as regards the State of Tamaulipas. Some are classed as only breeders of cattle, who may have land suitable for cultivation. The post-office address may not be in every case correct, but in such cases mail would go to relatives or friends who might be interested. Sufficient stamps should be attached to carry mail to its destination. I will take pleasure in distributing any such catalogues, but it is just as well to send them direct. Dealers must not expect to receive a reply or an order in every case.

This country greatly needs an increased water supply, and any company which can successfully obtain this by means of artesian wells, ordinary wells with wind-mills, or the construction of tanks, can do a good business.

The interior of this State is off the lines of travel and comparatively unworked. It would be a good idea to send a salesman to the principal towns and haciendas. While it might not be immediately profitable it would lay the foundation for a future and increasing trade. He should understand Spanish, the goods he sells, and have a large limit as to terms and conditions of sales.

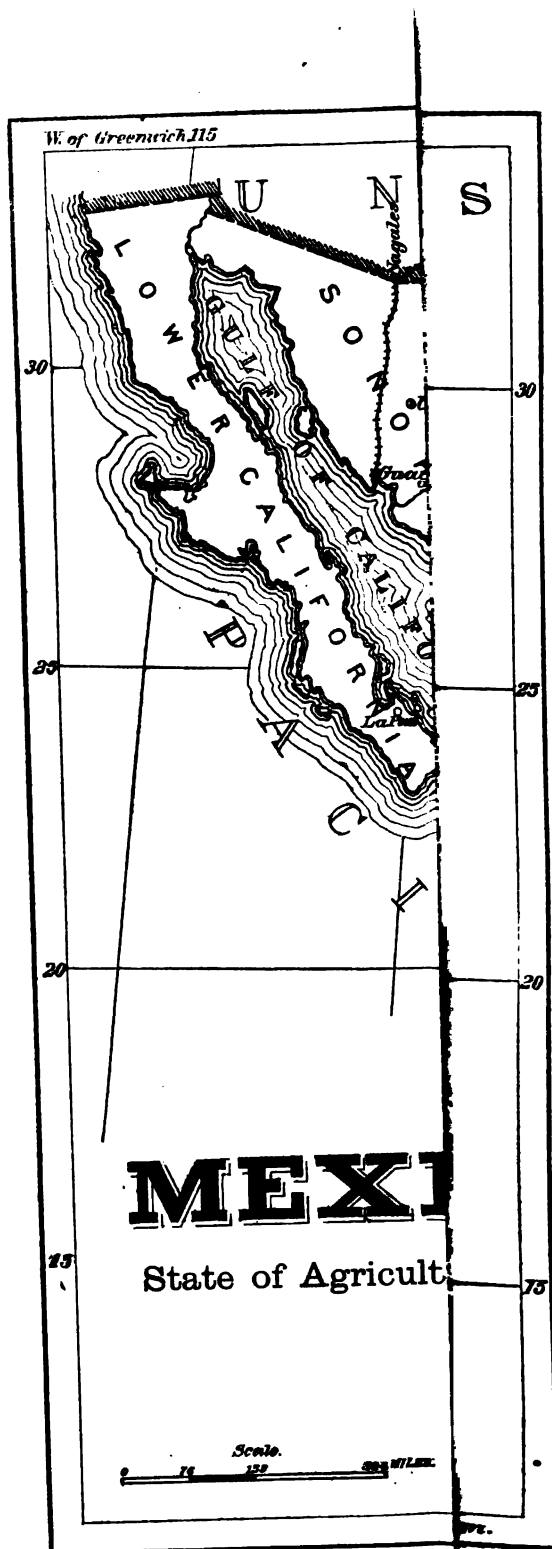
Owners.	Names of properties.	Address.	Class.*
General Manuel Gonzalez	Timas	General Gonzalez, ex-President, is now governor of Guana-juato. Letters may be addressed to his agents at Tampico or Victoria, Tamaulipas.	A. and S.
	La Mesa		
	Dolores		
	Santa Juana		
	El Verde		
	Cuestecitas		
	Tancasnequi		
	Santa Maria		
	La Guajolota		
General Romul6 Cuellar (governor of the State).	La Mesa de Leon	Victoria or Matamoros.	S.
Manuel de Leon	Trujillo	Victoria	S. and A.
Gregorio de Leon	Guadala	do	S.
Pablo Lavin (Spanish)	La Coma	do	S.
Francisco Martinez	La Cruz and La Crucita.	do	S. and A.
Vinda de Jos6 Martines	Santa Engracia	do	S. and A.
Juan Gojon	La Palmita	do	S. and A.
Pedro Bustamante (Spanish)	Tamatan	do	S. and A.
Francisco Cortina (Spanish)	La Viga	do	S. and A.
Heirs of General S. Candles	Sacramento	Matamoros	S. and A.
	Tangue	do	A.
Francisco Hernandez		Victoria	A.
Francisco Saldaña	Los Hernandez	do	S. and A.
R. Montemayor	Calabazas	do	S. and A.
Heirs of Jos6 Zorilla (Spanish)	La Mula	do	S. and A.
Silvano Montemayor	Puente	do	S. and A.
Blas Uballe	La Maroma	do	S. and A.
Vinda de Serna	La Panocha	do	S. and A.
Filizola Hermanos (Italian)	Santiagoillo	do	S.
Jesus Guillen	Santa Cruz	do	S.
Martin Dosal (Spanish)	Cinco Señores	do	S. and A.
Nicol6a Caballero		do	S. and A.
General Miguel de la Peña		Matamoros	
Col. Nieves Hernandez	Sta. Vicenta	do	S. and A.
Pedro Lozano	Los Tanques	do	S.
Tom6s Marquez	El Mezquite	do	S.
Lucinda G. de Garcia	El Palo Blanco	do	S.
Manuel F. Fernandez	La Piedra de Palo Blanco.	do	S.
Leonides Guerra	La Gloria	do	S.
Cris6foro Guerra	Rosio	do	S.
Juan T. Canales	Quijano	do	S.
Tom6s Garcia	San Francisco	do	S.
Isidro Longoria	El Alto	do	S.
Vinda de Andres Longoria	San Jos6	do	S.
Donato Longoria	El Barril	do	S.
Antonio G. Dávila	Lesteadero	do	S.
Rafael M. Cisneros y Cisneros	Moquetito	do	S.
Dionisio Villarreal	La Laguna	do	S.
Bernardo Yturria	Las Flores	do	S.
Evaristo Cárdenas	El Mezquite	do	S.
Encarnación Gonzales	Palangana	do	S.
Ynocencio de la Portilla	San Juanito	do	S.
Francisco F. Farias	Los Llanitoj	do	S.
Francisco Armendalaz (Spanish)	Santa Cruz	do	A.
Rosa G. de Chapa	San Bartolo	do	S.
Antonio Chapa Cisneros	Huizachal	do	S.
Adolfo de Gárate	Lavaderos	do	S.
Emilio de Gárate	Morelos	do	S.
Francisco de Gárate	Palo Blanco	do	S.
Refugio Chapa	Santa Rosa	do	S. and A.
F. G. Muguerza		do	S.
Feliciano San Roman (Spanish)	Buenavista	do	S.
Guadalupe Fernandez	El Banco	do	A.
	El Charco	do	A.
	La Huasteca	do	A.
Guadalupe Gonzales	Guadalupe	do	S. and A.
Andres Cuellar	La Jarita	do	S. and A.
Santos Garza	Las Delicias	do	S. and A.
Jos6 R. Villalobos	El Ranchito	do	S. and A.
Antonio Chapa Gomes	Kstero Verde	do	S. and A.
Gregorio Sierra	El Capote	do	S. and A.
Abato Longoria	Las Animas	do	S. and A.
Silverio Ramirez	El Galanefio	do	S. and A.
Francisco Galan	El Potrero	do	S. and A.
Ygnacio Ramirez	San Francisco	do	S. and A.
Ruperto Fragozo	La Diana	do	S. and A.
Domingo L. de Lara	El Asafrando	do	S. and A.
Ramon Elizondo	Buenavista	do	A.
Jos6 Ma. Carbajal		do	A.
Celestino Garcia	Vaqueterias	do	S. and A.
Miguel Lopez	Las Tescas	do	S. and A.
Lorenzo Lopez	Sta. Teresa	do	S. and A.
Jos6 Garcia		do	S.
Pedro A. G. Cavazos		do	S.

*A, Agriculture; S, Stock-raising.

Owners.	Names of properties.	Address.	Class.*
Prudencio Hinojosa	La Burrita	Matamoras	S. and A.
Lic. Leon Aragon	El Pino	do	S. and A.
Diego Farias	El Descanso	do	S. and A.
Timoteo Hinojosa	Granjenitos	do	S. and A.
Andres Martinez	El Mezquital	do	S. and A.
Manuel Garza	El Caracol	do	S. and A.
Rafael Garza	El Moquete	do	S. and A.
Ramon Longoria	El Refugio	do	S. and A.
Manuel Saldieria	La Poza	do	S. and A.
Margarito Cantú	El Arroyo	do	S. and A.
Fraucisco Garza Quintanilla	Soledad	San Fernando	S.
Gaspar Cuellar	El Mortero	do	S. and A.
Esteban Ayala	El Mogote	do	S.
Joaquin Guzman	La Piedra	do	S. and A.
Napoleon Dávila	do	do	S.
Luis Garcia	do	do	S.
Guinesindo Rendon	El Nido	do	S.
Martiniano Saldivar	do	Jiminez	S.
Cayetano Loperena	La Coma	do	S. and A.
Flacio Betancourt	do	do	S. and A.
Antonio Caballero	do	do	S. and A.
Benito Saldivar & hijo	La Ceja	do	S. and A.
Gualberto Garcilaso	do	do	S.
Antonio Garza Quintanilla	do	do	S.
Antonio Bolado	San Vincente	do	S. and A.
Ygnacio Bolado	San Matias	do	S. and A.
Margarito Cantú	do	Cruillas	S. and A.
Ramon Galvan	Chupaderos	do	S. and A.
Antonio Martinez	Los Magueyes	San Carlos	S. and A.
Francisco H. Hernandez	do	do	S. and A.
S. Peña	do	do	S. and A.
Martin de Leon hijos	do	Soto la Marina	S. and A.
Lopez Hermanos	do	do	S. and A.
Francisco Echeverria	do	do	S. and A.
Lázaro de la Garza	do	do	S. and A.
Alfredo de la Garza	do	do	S. and A.
Margarito Campos	do	Escandon	A.
Emilio Reina	El Abano	do	A.
Andres Castillo	El Ebanito	do	S. and A.
Zeferino Cobos	do	do	S. and A.
Victor Peña	do	Santa Bárbara de	A.
Ramon Lozano	do	Ocampo	A.
Pedro Quintanilla	do	Llera de Canales	S. and A.
Praedias Balboa	San Francisco	do	S.
Eusebio Herrera	do	do	A.
Jesús Aguilár	do	Tula	S. and A.
Andres Sanchez	do	Horcasitas	S. and A.
Juan Marroquin	do	Gomez Farias	S. and A.
Cruz Sustaita	do	do	A.
Eusebio Marroquin	do	do	S. and A.
Florencio Dominguez	do	Reynosa	S. and A.
Juan Dominguez	do	do	S. and A.
Eduardo Villareal	do	Camargo	S. and A.
Juan Garcia Peña	do	do	S. and A.
Octaviano Longoria	do	do	S. and A.
Donaciano G. Garcia	do	do	S. and A.
Antonio Yzaguirre	do	do	S. and A.
General Francisco Estrada	Caballeros	Mier	S. and A.
Pedro Chavez	do	do	S.
José Ruiloba (Spanish)	do	Guerrero	S. and A.
Volpe Hermanos (Italian)	do	do	S. and A.
Juan de Dios Gutierrez	do	do	Wool, &c.
R. V. Ramirez	do	do	Wool, &c.
Pedo G. y Garza	do	S. Miguel de Camargo	S. and A.
Marin G. y Garza	do	do	S. and A.
Patricio Milmo (British)	do	do	S. and A.
Manuel Vivanco Llanos (Spanish)	San Juan	Monterey, N. Leon	S. and A.
Vital Garza Benitez	do	Linares	S. and A.
Genaro Sepúlveda	do	do	S. and A.
Bruno Cantú	do	do	S. and A.
Juan de D. Garza Benitez	do	do	S. and A.
Vicente Garza Benitez	do	do	S. and A.
Manuel Garza Benitez	do	do	S. and A.
Mariano del Conde, (his Administrator, Anselmo Jimenez).	do	C. Mexico.	S. and A.
		Montemorelos	
		Nuevo Leon	

*A, Agriculture; S, Stock-raising.

WARNER P. SUTTON,
Consul-General.UNITED STATES CONSULATE-GENERAL,
Matamoras, June 16, 1886.



THE STATE OF AGRICULTURAL LABOR IN MEXICO.

REPORT OF CONSUL GENERAL SUTTON, OF MATAMOROS.

MAP.

The State limits have been very carefully given, and in each State the yellow spots or points of color indicate that that locality is represented in the following report.

The States are divided into districts, cantons, &c., and they in turn into municipalities. One or more spots of shade indicate reports from one or more districts or cantons, while shaded points indicate reports from municipalities.

There are 27 States, 2 Territories,* and 1 federal district. Reports are given from 21 States.

Mexico has no considerable lakes, rivers, coast indentations, or good harbors.

RAILWAYS.

The Mexico and Vera Cruz Railway (263 miles), and the Central, from El Paso to Mexico (1,224 miles), are finished and in operation. The National (Palmer-Sullivan, from Laredo to Mexico) lacks some 300 miles of completion. The Central has a line in operation from Nogales to Guaymas (265 miles). The Internacional (Huntington) is built and in operation from Piedras Negras some 130 miles south to a little beyond Monclova, as is also the National from Matamoros to San Miguel de Camargo, some 80 miles. The Central has about 100 miles built, from Tampico toward San Luis Potosi, and about 16 miles on the Pacific coast at San Blas. The National has built from Acámbaro, on the southern division, towards the Pacific coast at Manzanillo, as far as Pátzcuaro, some 95 miles. They have also some work done on the other end from Manzanillo.

Some work has been done on the Tehuantepec route, and there are various other small lines building or in operation.

TABLE A.—Area, population, and capitals.

State.	Area.†	Population (1880).†	Capital.	Population (1877-'80).
	<i>Sq. miles.</i>			
Sonora	81, 022	139, 140	Ures	9, 700
Chihuahua	105, 235	180, 758	Chihuahua	17, 000
Coahuila	61, 050	104, 181	Saltillo	16, 000
Nuevo Leon	14, 363	194, 861	Monterey	80, 000
Tamaulipas	28, 659	144, 747	C. Victoria	7, 800
Vera Cruz	27, 483	504, 970	Jalapa	12, 400
Tabasco	12, 716	83, 357	S. Juan Bautista	6, 800
Campeche	26, 083	86, 299	Campeche	16, 190
Yucatan	32, 658	285, 384	Mérida	32, 000
Sinaloa	25, 927	167, 093	Culiacan	7, 878
Jalisco;	48, 967	994, 900	Guadalajara	78, 600

* See Jalisco.

† Approximate.

; The territory of Tepic has lately been erected in the northern part of Jalisco.

TABLE A.—Area, population, and capitals—Continued.

State.	Areas.	Population (1880).	Capital.	Population (1877-80).
Colima	2,393	65,827	Colima	23,572
Michoacan	21,609	648,857	Morelia	20,400
Guerrero	24,228	308,716	Bravos	3,800
Oaxaca	27,889	718,194	Oaxaca	26,228
Chiapas	16,769	219,735	San Cristóbal	8,500
Durango	42,643	190,846	Durango	27,119
Zacatecas	26,585	413,603	Zacatecas	32,000
Agua Calientes	2,216	140,430	Agua Calientes	31,872
San Luis Potosí	28,889	506,799	San Luis Potosí	34,300
Guanajuato	11,130	788,202	Guanajuato	58,112
Querétaro	3,429	179,915	Querétaro	27,560
Hidalgo	8,480	434,096	Pachuca	12,500
Mexico	9,598	696,088	Toluca	12,700
Morelos	1,898	154,946	Cuernavaca	16,320
Puebla	11,761	704,372	Puebla	64,588
Tlascala	1,498	133,498	Tlascala	4,300
Federal District	85	354,340	Mexico	241,110
Lower California	59,033	23,195	La Paz	2,396
	763,804	9,377,279		

Of these nearly 10,000,000 inhabitants Mr. Garcia Cubas makes the following divisions:

Mixed race, 43 per cent	4,082,918
European and nearest descendants of Spaniards, 20 per cent	1,899,031
Native Indian, 37 per cent	3,513,208

TABLE B.—AGRICULTURAL PRODUCTS.

The agricultural products for the year ending June 30, 1883, are approximately as follows:

Articles.	Kilograms.	Valuation.	Articles.	Kilograms.	Valuation.
Indian corn	5,309,563,929	\$112,164,424	Peas (Spanish)	12,650,460	\$543,283
Wheat	338,704,093	17,436,345	Beans (common)	15,722,561	477,610
Sugar and panocha	70,000,550	8,781,317	Chick peas	11,485,422	471,075
Beans (frijol)	210,188,528	8,406,211	Potatoes	10,557,738	457,562
Cotton	25,177,760	6,608,831	Indigo	192,246	358,002
Barley	232,334,023	4,403,742	Ixtle	2,231,890	154,058
Pepper of all kinds	54,128,140	4,196,482	Sesamum orientale	8,050,140	153,643
Pulque (estimated)		3,500,000	Sarsaparilla	488,022	149,489
Heniquen	40,080,000	3,352,000	Anise-seed	1,175,950	127,268
Coffee	7,691,808	2,068,382	Lentils	2,102,625	83,043
Tobacco	7,804,990	2,008,153	Canary-seed	1,121,375	57,410
Straw	196,245,800	1,962,879	Cumin-seed	102,837	23,500
Rice	15,166,588	1,248,244			
Cocoa	1,443,002	1,140,050	Total	6,500,524,893	180,956,966
Vanilla	55,118	651,958			

TABLE C.—*The values of the agricultural products, approximately, by States, for the year 1883.*

States.	Corn.	Wheat.	Sugar, &c.	Frijol.	Cotton.
Jalisco	\$15,811,400	\$4,877,950	\$368,000	\$627,630	\$306,000
Guanajuato	10,107,000	1,963,000	16,000	805,890	.....
Mexico	9,235,300	820,490	131,000	464,380	.....
Oaxaca	8,802,700	541,820	885,000	737,420	.....
Michoacan	8,630,790	569,000	1,070,000	848,090	140,000
Puebla	8,452,600	1,300,000	658,000	704,280	.....
Vera Cruz	8,079,360	44,000	1,550,000	504,930	3,520,000
San Luis Potosi	6,081,600	720,000	.....	506,880	.....
Zacatecas	5,063,560	1,200,000	.....	413,590	.....
Yucatan	4,646,560	.....	400,000	284,460	.....
Hidalgo	3,456,000	62,910	46,000	428,610	66,675
Guerrero	3,063,800	.....	106,000	308,100	495,000
Querétaro	2,450,000	825,200	280,000	479,780	.....
Nuevo Leon	2,338,200	80,000	320,000	194,940	19,705
Durango	2,268,000	476,000	.....	195,000	854,000
Sinaloa	2,194,800	148,000	395,000	167,040	500,000
Morelos	1,885,200	4,800	1,650,000	128,400	.....
Tamaulipas	1,677,170	82,000	300,000	143,970	168,000
Tlascala	1,602,000	940,800	.....	133,500	.....
Chihuahua	1,520,310	2,000,390	.....	232,760	70,826
Sonora	1,899,920	280,000	276,000	116,280	.....
Tabasco	1,121,040	.....	187,000	92,940	.....
Campeche	1,014,330	.....	76,000	2,600	.....
Coahuila	836,060	1,143,100	55,000	111,800	309,375
Chiapas	796,000	.....	20,000	162,500	.....
Aguas Calientes	744,160	207,000	.....	25,870	.....
Colima	650,000	.....	13,000	22,560	156,250
Federal District	215,750	110,100	.....	3,960	.....
Lower California	22,710	59,330	6,000	12,710	.....
Total	114,166,340	17,535,890	8,735,000	8,660,670	6,605,831

States.	Barley.	Pepper.	Coffee.	Tobacco.
Jalisco	\$40,000	\$197,500	.....	\$710,000
Guanajuato	460,400	394,100	.....	.....
Mexico	417,400	266,890	.....	.....
Oaxaca	13,000	316,750	.....	48,250
Michoacan	167,000	324,430	121,000	8,500
Puebla	476,000	359,690	.....	.....
Vera Cruz	148,500	227,150	1,470,000	884,370
San Luis Potosi	195,000	253,000	.....	.....
Zacatecas	122,250	206,810	.....	.....
Yucatan .....	.....	138,050	.....	229,500
Hidalgo	52,400	143,850	.....	.....
Guerrero .....	.....	116,850	10,000	18,450
Querétaro	30,000	44,920	.....	10,900
Nuevo Leon	9,620	97,420	.....	.....
Durango	45,000	56,260	.....	.....
Sinaloa .....	.....	83,550	.....	26,850
Morelos .....	.....	17,920	52,000	.....
Tamaulipas	13,400	72,480	.....	.....
Tlascala	1,100,000	66,750	.....	.....
Chihuahua	281,500	82,600	.....	.....
Sonora .....	.....	58,330	.....	.....
Tabasco .....	.....	46,710	59,000	29,080
Campeche .....	.....	43,150	.....	31,670
Coahuila	782,000	52,070	.....	.....
Chiapas .....	.....	106,870	89,200	2,910
Aguas Calientes	107,000	70,250	.....	.....
Colima .....	.....	84,920	225,000	2,650
Federal District	19,300	12,000	.....	.....
Lower California	24,000	7,730	.....	.....
Total	4,508,770	4,200,000	2,074,200	2,006,130

NOTE.—The data given in Tables B and C are from different sources. Table B contains some items not in C. The various differences in several items are not at all surprising when the difficulty of obtaining any data is understood. Indeed, these very differences tend to show the approximate correctness of the figures given.

TABLE D.—Relative standing as to area, population, and principal products.

States.	Area.	Population.	Corn.	Wheat.	Sugar, &c.	Frijol.	Cotton.	Barley.	Pepper.	Coffee.	Tobacco.	Rice.
Sonora.....	2	22	21	14	12	22			20			12
Chihuahua.....	1	16	20	2		14	8	6	16			20
Cohahuilla.....	8	24	24	6	17	23	6	12	22			15
Nuevo Leon.....	17	14	14	18	9	16	12	17	14			
Tamaulipas.....	8	20	18	17	10	19	8	15	17			4
Vera Cruz.....	9	8	7	20	2	7	1	8	8		1	8
Tabasco.....	18	25	22		13	24			23	5	6	7
Campeche.....	12	26	23		16	27			25		5	17
Yucatan.....	6	12	10		6	13			11		3	3
Sinaloa.....	13	18	16	16	7	17	4		15		7	11
Jalisco.....	4	1	1	1	8	5	7	13	1		2	5
Colima.....	24	27	27		21	26	9		26	2	12	18
Michoacan.....	15	6	5	10	3	4	10	8	4	3	10	9
Guerrero.....	14	11	12		15	12			12	8	8	1
Oaxaca.....	10	3	4	11	4	2	5	16	5	7	4	19
Chiapas.....	16	13	25		19	18			13	4	11	14
Durango.....	5	15	15	12		15	2	12	21			16
Zacatecas.....	11	10	9	5		11		9	9			6
Agua Calientes.....	25	21	26	15		25		10	18			
San Luis Potosi.....	7	7	8	9		6		7	7			10
Guanajuato.....	20	2	2	3	20	1		4	2			
Queretaro.....	23	17	13	13	11	8		14	24		9	
Hidalgo.....	22	9	11	19	18	10	11	11	10			21
Mexico.....	21	5	3	8	14	9		5	6			
Morelos.....	26	19	17	21	1	21			27	6		2
Puebla.....	19	4	6	4	5	3		3	8			13
Tlascala.....	27	23	19	7		20		1	19			

Cocoa comes mostly from Tobasco and Chiapas; vanilla from Vera Cruz, Tamaulipas, and Tabasco; and indigo from Guerrero and Michoacan.

TABLE E.—VALUE OF THE REAL ESTATE OF MEXICO, 1883.

The value of the urban and rural property, June 20, 1882, is approximately stated as follows:

States.	City prop-erty.	Rural prop-erty.	Total.
District Federal.....	\$48,383,928	\$6,896,754	\$55,280,683
Jalisco.....	14,165,493	22,654,580	36,820,073
Guanajuato.....	9,876,894	21,273,616	31,150,510
Puebla.....	14,380,690	15,458,774	29,839,464
Vera Cruz.....	14,635,884	8,268,790	22,904,674
Mexico.....	4,496,963	18,101,955	22,598,918
Michoacan.....	6,896,402	13,615,022	20,511,424
Zacatecas.....	5,896,800	10,265,600	16,162,400
Hidalgo.....	2,695,276	12,415,824	15,111,100
Durango.....	4,386,790	9,781,858	14,168,648
San Luis Potosi.....	5,448,889	7,681,336	13,130,225
Sinaloa.....	3,658,446	5,751,890	9,410,336
Oaxaca.....	5,793,011	2,837,578	8,630,589
Queretaro.....	4,121,849	4,370,652	8,492,501
Nuevo Leon.....	8,294,500	4,612,420	12,906,920
Sonora.....	2,350,600	4,872,900	7,223,500
Chihuahua.....	2,580,300	4,856,584	7,436,884
Tlascala.....	585,964	5,621,896	6,207,860
Tamaulipas.....	2,685,960	2,996,355	5,682,315
Morelos.....	1,260,300	4,200,000	5,460,300
Cohahuilla.....	1,469,936	3,876,540	5,346,476
Chiapas.....	1,356,500	3,622,840	4,979,340
Agua Calientes.....	1,456,712	3,365,418	4,822,130
Tabasco.....	1,622,490	2,968,785	4,591,275
Lower California.....	459,326	3,896,200	4,355,526
Colima.....	1,465,677	2,789,518	4,255,195
Yucatan.....	1,658,795	1,978,988	3,637,783
Campeche.....	653,830	2,746,591	3,400,421
Guerrero.....	685,897	2,391,538	3,077,435
Total.....	168,743,582	213,620,332	382,363,914

TAXES.

The rate of taxation varies greatly from 2 mills on the dollar on the productive portion of a country estate (*fincas* or *haciendas*) in Vera Cruz to 1½ cent in Colima. It is estimated that this tax averages about 8 in 1,000. There are heavy taxes on inheritance, transfers of title, capital employed in business, agricultural products, manufactures, and local taxes on exports of silver and bullion, &c.

The general system of taxation is to strike capital and movable wealth as most certain of results, and as less trouble to the tax-gatherer. Each load of charcoal wood or produce which comes for sale through this city gate must pay tax 6½ cents as a supposed road tax.

NATURE OF AGRICULTURAL PRODUCTS.

Corn.—This is the principal food of the country. It is usually gathered and piled up with the husks left on to preserve it from the weevil. Corn, which is of several varieties, is planted in rows (one way) or sowed in furrows. A small wooden plow, with an iron point, drawn by an ox, horse, or mule, is often run through; but usually the work of cultivating is by hand with heavy clumsy hoes. When harvested it is sometimes topped and the tops and husks carefully saved, the first for fodder, the second for cigarette covers, cushions, &c. The corn is shelled by rubbing the ear over the ends of cobs bound together. The corn is soaked in weak lye and hulled, after which it is mashed on a metate. This is a heavy stone as long as and somewhat wider than a wash-board, with a slightly rough face. The two front legs are shorter than the two hind ones. The operator kneels behind and mashes the softened kernels with a stone roller. The paste is patted into thin flat cakes, and these are baked over coals or on a hot stone or iron and called *tortillas*.

In some sections hand-grinding corn-mills are used, but the metate is much preferred.

Where corn is fed to horses it is shelled and put into a nose-bag, called *morral*.

Frijoles.—The frijol is a brown bean—some kinds are quite small and others large; but the usual common frijol is slightly smaller than the common white bean of the United States. It is also much richer and more nourishing. Next to corn it is the most important article of diet for the poor. It is often eaten as a dessert at the tables of the wealthy. Usually boiled, they are eaten by scooping them up with a tortilla. This renders one somewhat independent of knife and fork.

Wheat.—Wheat is raised to a small extent in the higher plateaus. The grain is small and hard, and makes, when properly milled, a good and nourishing flour.

Potatoes.—Potatoes are grown to a small extent. The seed appears to degenerate and needs frequent changes, especially in hot lands; but with proper care its use could be greatly increased with much benefit to the poor people. The camote, a sort of sweet potato, is also grown. In some soils it is quite good, and could with care be made to equal the sweet potato of the Southern United States.

Barley.—Barley in small quantities is raised in most high altitudes. Rice of a fair quality is raised in the low hot lands. It is cleaned by pounding in rude pestles.

Peas.—Peas of various sorts are much used and make an important addition to the diet.

Coffee, cocoa, and sugar.—Coffee, cocoa, and sugar, clarified and brown, are quite largely raised. Some varieties of the first are perhaps the finest in the world. The brown sugar, under various names, is an article of quite common use.

Tobacco.—Tobacco, which is largely raised, is used almost universally. Many cigars are consumed, but principally it is used in cigarettes. The poorer people use corn shucks or brown paper for wrappers.

Pumpkins.—The calabaza, a sort of pumpkin with the nutritive qualities of the squash, is a common and very useful article of food.

Melons.—Melons and watermelons occupy their usual and rightful rank with all classes, but are the special food of the poor.

Peppers.—Peppers of great varieties are used unsparingly to flavor food, as are onions and garlic.

The maguey.—The besetting sin of the lower classes is a weakness for the juice of the maguey and its allied species, under the various names of *pulque, mezcal*, &c. A brandy (*aguardiente*) is also made from the refuse of the sugar and molasses.

Silk culture.—Silk culture has been a favorite idea in Mexico for two hundred years. Hidalgo, in the village of Dolores, had previous to 1810 produced enough silk to make dresses, robes, &c. Various sorts of mulberry trees flourish from Matamoros to San Diego and Yucatan; but the other questions, and especially that of comparative cost, have yet to be fully tested.

LOCUSTS.

The locusts (*chapulines*) have been a sore plague to many portions of Central and Southern Mexico for the last two or three years. The import duty on corn was suspended so as to allow corn from the United States to be imported into Yucatan to feed the people and plant new crops.

HOW THE COMMON PEOPLE LIVE.

The lower classes, of whom this report mainly treats, have generally very few of the necessities (so called) of this life. Knives, forks, spoons, beds, pillows, window-glass, and many similar articles are rare and often unknown among them.

PEONAGE.

The question of peonage is dealt with fully in various reports which follow and from so many points of view that any extended comment from me is unnecessary.

That in many localities peonage exists is undoubtedly true. This, however, is in direct opposition to the Mexican constitution, one of the most liberal and well-considered documents ever written. The problem of getting the lower classes to work is as difficult here as in Louisiana, and in spite of liberal laws the practical results are often to make the debtor workman a slave to the glebe.

The publication of the reports herewith translated has caused much comment and brought out some denials from State authorities, especially Chiapas. However, these are from so many points and are so frankly and honestly made as to be practically unquestionable.

As the state of agricultural labor in Mexico has been in the past a closed book to all the world, I am led to believe that the views of rural

life and conditions herein given will be found of more than usual interest.

The accompanying tables of measure, &c., and the list of untranslated words will serve to illustrate the meaning of the text.

WARNER P. SUTTON,
Consul-General.

UNITED STATES CONSULATE GENERAL,
Matamoros, Mexico, March 4, 1886.

TABLES OF MEXICAN MEASURES, WEIGHTS, AND VALUES.

TABLE G.—*Length.*

[Approximate.]

Legua (league)=4,190 meters=5,000 varas=2.6 miles, English.
Cordel=41.9 meters=50 varas=137½ feet, English.
Vara (yard)=0.838 meter=2 feet 9 inches, English.
Pie (foot)=0.28—meter=¼ vara=11 inches, English.
Palmo (hand)=0.2+ meter=½ vara=8½ inches, English.
Pulgada (inch)=0.02+ meter=⅓ foot=0.916 inch, English.
Dedo (finger)=0.0175—meter=⅓ vara=0.687 inch, English.
Linea (line)=0.002—meter=⅓ inch=0.0763 inch, English.
Punto (point)=0.00016 meter=⅓ line=0.0064 inch, English.
The base of the above table is the Mexican vara, which is about ⅓ of 1 per cent. longer than the vara of Burgos.

TABLE H.—*Surface.*

[Approximate.]

Sitio de ganado mayor=1755.61 hectare=1 sq. league=4338 acres, English.
Sitio de ganado menor=780. + hectares=sq. of ½ league=2928 acres, English.
Criadero de ganado mayor=438.9+ hectare=½ of sq. league=1084½ acres, English.
Criadero de ganado menor=195. + hectares=sq. of ½ league=462 acres, English.
Fundo legal para pueblos=101. + hectares=1,300 varas sq.=250 acres, English.
Labor (field)=70. + hectares=1,000 varas sq.=177+ acres, English.
Caballeria de tierra=43. — hectares=1,104×552 varas=107½ acres, English.
Suerte (lot)=11— hectares=552×276 varas=27 acres, English.
Fanega (for corn land)=3½ hectares=276×184 varas=9—acres, English.
Solar (house, &c., lot)=17½ tares=50 varas sq.=0.44+ acre, English.
A fanega of land is also subdivided into almudes and cuarterones—see dry measure—of barley and corn land. The base is the Mexican vara.

TABLE I.—*Capacity.*

[Approximate.]

DRY.

Carga=181.6+ liters=5 bushels, English.
Fanega=90.8+ liters=2½ bushels, English.
Almud or celemin=7.5+ liters=1⅓ fanega=6½ quarts, English.
Cuarteron=1.89+ liters=½ almud=1.6+ quarts, English.
Cuartilla=0.94+ liter=¼ almud=0.83+ quart, English.
Copa=0.47+ liter=⅓ almud=0.83+ pint, English.

OIL.

Arroba (measure)=12.65+ liters=25 cuartillos=2.785 gallons, English.
Cuartilla or pound measure=0.5+ liters=0.89 pint, English.
Panilla=0.12654 liter=½ cuartillo=0.89 gill, English.

OTHER LIQUIDS.

Galon=3.65 liters=8 cuartillos=0.805 gallon, English.
 Azumbre=1.825 liters=1.61 quarts, English.
 Cuartillo=0.4563 liter= $\frac{1}{2}$ azumbre=0.805 pint, English.
 Medio cuartillo=0.2281 liter= $\frac{1}{4}$ cuartillo=1.61 gills, English.
 Cantara=1 arroba of 32 cuartillos.
 Botija or jarra=20 cuartillos, also 18 cuartillos or one-ninth of the barril medido of 162 cuartillos.
 Barril=162 to 140 cuartillos.
 Castenal= $\frac{1}{4}$ of a barril.

TABLE K.—Weights.

[Approximate.]

Marine ton=920,493 grams=2,000 pounds=0.9 ton, English.
 Carga (for most goods)=138,074 grams=12 arrobas=304.4 pounds, English.
 Quintal=46,025 grams=100 libras=101.5 pounds, English.
 Arroba=11,506 grams=25 libras=25.4 pounds, English.
 Libra (pound)=460.27634 grams=1.015 pounds, English.
 The base is the libra.

TABLE L.—Values.

Peso=100 centavos=81 $\frac{1}{4}$ cents in United States gold.
 Real=12 $\frac{1}{2}$ centavos.
 Medio or medio real=6 $\frac{1}{2}$ centavos.
 50c., 25c., 10c., and 5c. silver coins are also in use.
 The 50c. pieces are sometimes called tostones and the 25c. pesetas.
 The metric system was adopted here many years ago, but the old denominations obtain everywhere except in official and railway business, and in some mercantile establishments.
 As will be noted, the agricultural data are almost entirely in the old denominations.

UNTRANSLATED WORDS.

Hacienda: A property of various sorts—a larger ranch.
Finca: A property.
Pilon or piloncillo: A cake of crude sugar.
Zonile: 400 ears of corn—125 pounds, more or less.
Tortilla: Thin corn-meal cake.
Cuartilla of land: 25,000 square varas.
Metate: A stone on which to mash softened corn.
Morral: A nose-bag for horses, &c.
Carga: A weight of usually 304 pounds (or 5 bushels), but it varies greatly in various localities and for different articles. A carga of charcoal in Matamoros consists of 2 sacks, say 15 to 25 pounds. In other sections and for some articles it may mean a load and vary from 50 to 400 pounds. It is often computed for one article by measure and for another by weight; hence its uncertainty as a unit.
Conducta: A money train.
Jefe politico: A civil officer.

SUBJECTS FOR QUESTIONS.

- (1) Wages of agricultural laborers.
- (2) Conditions under which contracts for agricultural labor are made.
- (3) Supply of laborers.
- (4) Principal agricultural products—production and prices.
- (5) Retail prices of principal articles of consumption, as meat, corn, &c.
- (6) Prices of neat cattle, horse stock, sheep, and hogs.
- (7) Private lands for sale and prices.
- (8) Possible industries.

STATE OF AGUAS CALIENTES.

DISTRICT OF AGUAS CALIENTES.

(1) Field laborers receive for a day's work one real (12½ cents) and one-third of an almod (about two quarts) of shelled corn.

(2) Contracts are made (1) by renting lands at \$8 to \$10 for sufficient land, say nine acres, on which to plant a fanega (2½ bushels) shelled corn; and (2) by renting on shares. The latter is arranged as follows: The owner furnishes land, seed, oxen, and tools. The renter is obliged to maintain the oxen, and in case they die, are lost, or stolen, to pay their fair value. The latter also cultivates the crop, which is divided equally between both parties. The proprietor bears half the expense of gathering the corn.

In gathering the *frijol* (beans) the owner pays one real the fanega for cleaning, and the product is divided equally.

(3) There are sufficient laborers.

(4) Principal products are corn, *frijol* (beans), wheat, and barley. The annual product estimated is: Corn, 60,000 fanegas (2½ bushels); *frijol*, 8,000 fanegas (2½ bushels); wheat, 15,000 fanegas (2½ bushels); barley, 4,000 fanegas (2½ bushels). Wheat straw is worth 15 to 18 cents the arroba (25 pounds), and barley straw, 25 to 31 cents. Corn in the field is worth \$1 to \$2 the fanega, and when gathered, \$2.50 to \$3. *Frijol* in fields, \$2 the fanega, and gathered, \$3 to \$4.

(5) Beef, 8 to 10 cents the pound; mutton, 15 cents, and hog's meat, 12 cents. Lard or tallow, \$4.50 the arroba.

(6) Meat cattle, bull or steer, \$16 to \$20; cow, \$12 to \$16; fat ox, \$25 to \$30; sheep, \$3 to \$3.50. Hogs, \$3 to \$7; fat, \$20 to \$24; horses, gentle, \$20 to \$80; wild, from \$8 to \$25.

(7) There are no opportunities for buying private lands. The last sales made were at \$800 the caballeria (107½ acres).

(8) Manufactories of cottons, threads, and paper might be established. There is sufficient water power.

MANUEL AZCO.

AGUAS CALIENTES, June 20, 1885.

STATE OF CHIAPAS.

DISTRICT OF PICHUCALCO.

(1) Laborers are divided into two classes, free and debtor. The first receive 25 cents per day, with rations, or 38 to 50 cents without. The debtor class are those who receive in advance a sum sufficient to pay their former proprietor, which sum frequently reaches \$500 or more. The monthly wage of these is arranged after this wise:

Money	\$4 00
500 ears of corn	3 31
20 pounds <i>frijol</i>	62
Salt	7

8 00

To this should be added—

House rent	1 00
Medicine (given free)	1 00
Garden	33
2 per cent. (monthly) on \$200 average debt	4 00
2 bottles aguardiente	25

6 58

This would give an actual salary of \$16.58 per month of 30 working days. Considering that the ration of corn, *frijol* (or rice), and salt has to be given even in cases of prolonged sickness, the monthly wages may be estimated at \$18 per month.

There is another class of laborers here who are only bound to work four days in the week. These are given house rent and \$4 monthly, without other allowances.

(2) When the laborer is dissatisfied he obtains from the proprietor a statement more or less as follows:

"A. B., laborer [married, widower, or single], seeks employment (accommodation) at (of) farm work for the sum of — dollars, which he owes me, as per account made

to his satisfaction. The person who wishes may contract with him, first paying the above sum, for which effect a term of eight days is given."

With this document the bearer seeks a new master, and after the debt has been paid a new contract is made before judicial authority for one or more years. The laborer agrees to give his services to the labors of the field on all days except feast days. The proprietor agrees to pay the salary, supply the stipulated allowances, and make necessary advances in money, clothing, and tools. This contract is not always made with the above formalities. Sometimes the account is simply receipted as paid by the new master, the laborer being subject to the customs of the country, and at liberty to leave when he shall wish to and can obtain a new master to pay him out. The wife of the laborer, except when otherwise stipulated, is obliged to give her services in work suitable to her sex.

(3) This system is very inconvenient for the proprietors. There is an immediate necessity of spending at least \$8,000 to obtain a supply of forty laborers, and it is often impossible to immediately obtain this number. Hence the custom, only agreeable to those born in the locality, to go on gathering one by one, until, after many years, they have sufficient hands to work a first-class property, which is enlarged as the number of laborers is increased.

By this means a large sum has been invested in persons who offer no other security than their personal labor, and the proprietor finds himself obliged to exercise great vigilance, organizing the holding in such way as to make the servant feel that his liberty of action is restrained. The only way he has to get out of such a condition is to flee, leaving everything dear to him, including his family.

Another inconvenience experienced, not less grave, is caused by death of the laborers.

And in spite of all this, no proprietor of this locality will accept any laborer born here who does not have a debt against him. What are the causes which have created this custom or necessity? The most important causes are the scarcity of laborers, the natural indolence of the indigenous Indian race, and, most important of all, the fertility of the soil. Whether from the excessive heat of the sun or from other causes, there exists among inhabitants of intertropical America a marked disposition to inaction. This is aided by the fertility of the soil and the ease with which sufficient may be obtained to satisfy the few necessities of those who are happy if they have enough for the day. Thus under the hut of the indigenous Indian, hidden by palm leaves or surrounded by corn patches (*milpas*), the philosopher recognizes that man cannot progress except under the pressure of imperious necessity.

It is therefore natural that man should live thus here; that there will be no spirit of enterprise; and that agriculture, the source of riches, should remain stationary for want of labor.

According to the list formed in October, 1884, there were in this municipality 279 debtor laborers; certainly a very small number. Some fincas have thirty, others only two or three. Many proprietors work vainly trying to increase their holdings, but the great scarcity of hands prevents; and this, too, in spite of the nearness of such populous towns as Chapultenango, Nicapan, Ocotepec, Ixhantlan, and Tapilula. The poor people in these refuse to work even when offered increased wages, being satisfied to remain as they are. The Indian inhabitant of these towns contracts a debt in some store kept by Europeans or their descendants. The goods are of little or no intrinsic value, but they please his eye or serve to fulfill promises made to a titular saint on condition that he suffer from no pest or have good crops, or in fine something to satisfy his vices. When the time of payment arrives he cannot make it and he goes to a proprietor, who pays the debt and takes his labor on the hacienda. He is thus made a debtor laborer, and only for this thinks himself obliged to labor. Once reduced to this condition the debt is increased by the advances which he needs, and which are more than he earns, and his intelligence is not sufficient to understand business matters.

Some persons of exaggerated ideas, and inspired with humanitarian zeal, not understanding the question, which involves questions of great importance for the future of the country, have pretended to see in this class of laborers pure slavery. But to this cannot be given the character of an institution universally abolished and repelled by conscience and sane reason. Undoubtedly greater benefits would accrue to the proprietor from the employment of the capital absorbed by his servants in increasing his fields and working free labor. This is admitted by every proprietor here; but persuaded as they are of its impossibility, they accept the situation and use the only method to induce the Indian to work.

I notice also that from time to time the discussion of the subject includes the terms of the contracts. The proprietor gives to the servant, without limit, land for any purpose, and may even give certain days of the year besides feast days, so that by working actively and taking no more than is absolutely necessary for his subsistence for himself and family, he may cancel the debt, as is frequently done.

(4) The principal products are cacao, coffee, sugar, crude sugar (*pilon* or *piloncillo*), corn, frijol, and rice.

There are in the municipality (not including very small ones) 23 fincas for cacao, which is the principal product. The number of cacao trees cultivated is about 559,200. Estimating the semi-annual product of 1,000 trees at five cargass, of 300 pounds or 138 kilos, gives 2,796 cargass (75,210 kilos) as the total product of cacao-chocolate beans.

Corn 87,560, kilos; frijol, 51,800 kilos; rice, 45,000.

There are two fincas devoted to sugars. I cannot give data, but the supply is not sufficient for local consumption.

These articles are sold at the following prices:

Cacao, carga.....	\$11 00 to \$28 00
Coffee, quintal.....	7 00 to 12 00
Corn, zontle of 5 arrobas.....	2 00 to 7 00
Frijol, arroba.....	38 to 2 00
Rice, cleaned, arroba.....	1 00 to 2 00
Sugar from Tobasco, arroba.....	1 50 to 2 50
Sugar from Copainalá, arroba.....	50 to 1 00

(5) Retail prices are as follows:

Beef meat, 14 ounces for 6½ cents; hog meat, 10 ounces for 6½ cents; corn, five ears for 6½ cents; frijol, 1 pound for 6½ cents; rice, 8 ounces for 6½ cents; lard, 10 ounces for 6½ cents.

(6) No neat cattle or horses are raised; all are brought in from the interior of the State. There are but few sheep and hogs. Prices are extremely variable, as follows:

Neat cattle, lean.....	\$12 to \$16 00
Neat cattle, fat.....	20 to 22 00
Horses, wild.....	16 to 35 00
Horses, tame.....	100 to 200 00
Sheep.....	1 to 1 50
Hogs.....	1 to 4 00
Hogs, fat, &c.....	16 to 20 00

(7) The fertility of the soil is such that owners will not sell except in cases of extreme necessity. No sales have lately been made. Sales made in former times varied greatly according to class. Land which will not produce cacao is considered second class and its value very small. For this reason sales were formerly made from \$2 to \$24 the hectare.

There are not the same difficulties in acquiring national lands. Some distance away are fertile national lands covered with forests, but no effort is made to reclaim them, as it is difficult if not impossible to raise cacao on them. These lands are some 1,328 meters above the level of good cacao lands.

(8) On the national lands above mentioned might probably be raised coffee, vanilla, caoutchouc (*hule*) (*Siphonia elastica* Pers.) and quinia (*Cinchona calisaya* Weddel). Immigration would help greatly in developing these lands.

JOSE N. ROVIROSA,
Agent.

PICHUCALCO, 1885.

DISTRICT OF SAN CRISTOBAL.

(1) From \$36 to \$200 per annum. There are weekly laborers who receive nine to eighteen reals (12½ cents each) per week. We have servants who gain the wages given first above, but they obtain advances running to \$100 in this municipality, and in other parts of the State to \$500. These amounts are often lost by death or flight of the servant.

(2) Contracts are made under the condition of the federal code, which is the law in this State.

(3) There is and is not a scarcity of hands. The Indian villages in this State with two or three exceptions confine themselves to making small crops of corn, sufficient for the whole year. There would be no scarcity if these inhabitants, now indolent and dissipated, could be converted into industrious laborers capable of consuming and producing on a larger scale.

(4) The usual products of this municipality are wheat, barley, linseed, alfalfa, corn, frijol, vegetables, and fruits of superior quality suitable to cold land. Wheat and barley, \$5 to \$10 for a carga of 10 arrobas (25½ pounds each); alfalfa, arroba for 6½ cents; corn, carga of 12 almudes (say 75 quarts), \$3 to \$6; frijol, fanega (2½ bushels), \$6 to \$9.

No one ever tells the product of the crop for fear of having to pay the tax of 1½ per cent. imposed by law on the value of the finca. Consequently it is not easy to compute the crop raised.

Lemons and limes of a good quality sell here at 40 for 6½ cents; mangoes, apples, quinces, &c., sorted, at 25 for 6½ cents; same unsorted, almud (6¼ quarts), for 6½ cents; platanos, small, 25 to 30 for 6½ cents; platanos, large, 12 for 6½ cents; pineapple, large, fine, 1 for 6½ cents; pitajalo cactus (*pitahayas*) (much prized), 2 for 6½ cents; sweet sapote, 6 for 6½ cents; potatoes or sweet potatoes, almud, weighing more than an arroba (25½ pounds) for \$1.50; starch, arroba, for \$1.50.

(A long list of vegetables follows, notable for good quality and cheapness.)

(5) Ten ounces very good meat for medio real (64½ cents); one pound coffee, medio; one pound sugar, medio; one bottle milk, medio; one pound cacao, 25 cents; twenty tortillas of 8 or 9 inches diameter for medio; four *panes* (small loaves bread) called here *birotas*, medio; 3 to 4½ pounds *panela* (brown sugar) medio.

(6) Neat cattle, \$10, \$12, and \$14; horses, \$10 to \$200; mares, \$14 to \$16; sheep and hogs, 50 cents to \$20.

(7) Prices of the last sales of land vary according to situation, quality of soil, water more or less drinkable, prevailing winds, stone, &c., from \$50 to \$500 the *caballeria* (107½ acres). It is not difficult to find for sale a finca of a sitio (square league) more or less.

(8) Any industry may be established, saw-mills, mills to grind wheat, corn, &c., manufactures of glass, porcelain, cotton, wool, silk, and hair. There are sufficient hands to work, plenty of water-power, and six leagues (16 miles) away is a large tract of land suited for raising cotton to supply the factories which may be built.

CLEMENTE J. ROBLES.

SAN CRISTOBAL, LAS CASAS, July 25, 1885.

Municipality of Tuxtla Gutierrez.

(1) Twenty-five cents to 31½ cents for day laborers.

(2) The conditions under which contracts are made are as follows: The individual presents himself before the new master or patron, with whom he wishes to obtain a position, with a paper indicating the sum he owes the one whom he has just left, and the one who employs him pays the debt which the paper indicates, and they agree upon the time he has to serve and the wage he shall receive. The latter is generally \$2.50 per month, giving him a ration of corn, frijol, and salt, or \$4 without the ration; in both cases the necessary tools are furnished him. The ration consists of six almudes (6¼ quarts each) of corn, half almud of frijol, and one pound of salt. When the individual leaves the situation a paper containing his account is given him so that the one who employs him may return the sum he owes.

(3) Lamentably scarce.

(4) Corn, sugar in pilon (large cakes), *panela* (crude sugar), heniquen, frijol, sundry fruits, caoutchouc, *achiote* (the heart-leaved bixa or annatto, *Bixa orellana* L.), cotton, *añil* (indigo), and coffee. Corn, sugar, *panela* (crude sugar), and frijol are produced in regular quantities; the other products in very small portions. It is not easy to ascertain the quantities.

(5) Corn, 18 cents to 31 cents the almud (6¼ quarts) of 22 pounds; sugar, in pilon (cakes), \$4 to \$6 the quintal (101½ pounds); frijol, 37½ cents to 75 cents the almud of 25 pounds; fresh meat, 12½ cents the pound.

(6) Neat cattle, from one year upward, \$8 to \$10; horse stock, \$10 to \$12; sheep, from six months up, \$1; hogs, 50 cents to \$2.50. These prices are those of lots of ten or more head; it would be impossible to fix the price of those sold singly, as it varies notably.

(7) There is no opportunity for acquiring private land in this municipality, but there is much National or Government land with good and variable climates, and consequently susceptible of very different productions, and good pastures. Private lands have sold from \$40 to \$60 the *caballeria* (107½ acres).

(8) Machines for spinning and weaving cotton, saw-mills, machines for brick-making, machines for extracting fibers, such as heniquen, ixtle, *pita* (Spanish dagger, agave), ramie, *piña* (cone or nut of the pine tree), *piñuela* (nut or fruit of cypress), and *malavisco* (marsh-mallows); foundries for iron and lead.

LUIS FARRERA.

TUXTLA GUTIERREZ, July 16, 1885.

Municipality of Zintalapa.

(1) Twenty-five cents per day.

(2) Those who work under contract by the year are furnished a house, rations, a small piece of ground, necessary seeds, tools to work with, and \$3 per month.

(3) Scarce, and a great demand for them.

(4) Corn, frijol, rice, sugar, and añil. The annual crop of corn is about 8,000 fanegas (2½ bushels), at \$4 each; that of rice, 200 fanegas, at \$4 each, entirely consumed

in this locality for lack of ways or roads to export it. The crop of sugar amounts to 2,000 arrobas (25½ pounds), and the average price is \$1.50 per arroba. The crop of añil is approximately 450 arrobas, at \$15 each on the average, the only product which can be exported to the interior and foreign countries.

(5) Retail prices are: Corn, 25 cents the almud (6¼ quarts); frijol, 37 cents the almud; rice, 37 cents the almud; sugar, 10 cents pound; cheese, made from cow's milk, 6 cents pound; butter, 12 cents pound.

(6) Neat cattle, \$7; horse stock, \$10; sheep, \$1; and hogs, \$1 to \$2.

(7) Private lands can be obtained, and the latest sales were made at \$50 the caballeria (107¼ acres).

(8) The industries which might be established on a grand scale are the cultivation of cotton, ixtle, heniquen, sugar-cane, and grass-hay for neat cattle; which branches are dead on account of complete lack of cart roads for exportation and of place for its consumption in these localities.

M. J. MIGUEL.

ZINTALAPA, July 13, 1885.

DISTRICT OF PALENQUE.

Municipality of Catasaja.

(1) Thirty-seven and one-half cents per day.

(2) Contracts are made before the civil judge, when the servant owes less than \$100; if he owes more than \$100, they are made before the judge of the court of first instance. The reason for this is because in the State of Chiapas servitude still exists, the remains, unfortunately, of slavery in the past.

(3) Field hands are scarce.

(4) The principal agricultural products are corn, frijol, rice, sugar, tobacco, logwood, mahogany, cedar, lard, aguardiente, neat cattle, and horse stock.

A thousand head of cattle and horses are annually exported to the States of Tabasco and Campeche, where the neat cattle are sold at \$16 usually, and the horse stock at the same price, more or less. Respecting the other products, they are exported in small quantities, with the exception of the logwood, mahogany, and cedar. Of the first, there are about 8,000 quintals (101¼ pounds each) sent out, and of the latter two over a thousand tons. The logwood sells at 62½ cents the quintal, and the mahogany and cedar from \$12 to \$18 at ton (.9 ton English).

(5) Fresh meat sells at retail at 6 cents for 8 ounces; corn, \$4 the carga of 90 pounds, as this municipality is invaded by the locust. All the other articles of consumption have raised in the same proportion, and thus the frijol sells at \$3 the arroba (25½ pounds), sugar at \$2, rice at \$1.50, and lard at \$25 the quintal.

(6) This question is answered in the preceding replies.

(7) It is very easy to acquire private lands, sales being made at the rate of \$50 the caballeria (107¼ English acres).

There is a vast amount of public lands, for the greater part uninhabited, the population being small. On the 8,000 square leagues which the department has, there are scattered 10,000 or 11,000 people.

(8) All kinds of industries can be established here, as the lands are very fertile. Products can be easily sent by the river Usumacinta, which is only 4 leagues distant, to the ports of Isla del Carmen and Frontera, distant 30 leagues, for export. This is a level region. The Sierra Madre is about 9 leagues south, and the intervening land could not be more beautiful and exuberant.

JUAN B. LASTRA.

CATAZAJA, July 8, 1885.

STATE OF COAHUILA.

DISTRICT OF PARRAS, MUNICIPALITY OF SAN PEDRO.

Hacienda del Pilar.

(1) Thirty-seven and one-half cents per day in seeds (grain) or goods. In the four months of cotton picking 50 cents to 75 cents in money.

(2) Ordinarily verbally by *tareas* (tasks, of usually 900 square varas). Settlements are made at the end of the week, advances having been given Tuesday and Thursday, or only on Wednesday at some ranchos.

(3) Enough, but they are generally inconstant and go from one side of the Laguna (the Laguna country is a fertile tract in this section of Mexico) to the other like

nomads. As a result, while the proprietors could use more laborers, there is yet more than enough for the cultivation of the present area of fields.

(4) Principal product is cotton. Besides this, corn, wheat, barley, frijol, peas, potatoes, calabazas,* melons, and watermelons.

The product of cotton is estimated at 30,000 to 40,000 quintals (101½ pounds each); wheat, 15,000 to 20,000 cargas (304 to 336 pounds each); and the other crops vary greatly, depending on the overflow of the Nazas River or upon irrigation.

Prices: Cotton, \$14 per quintal (say 14 cents per pound); peas and frijol, carga, \$10; barley, \$5 per carga; potatoes, \$1 per arroba (25½ pounds).

(5) Retail prices as follows: Meat, a real (12½ cents) per pound; corn, 31 cents per almud (6½ quarts); piloncillo, 9½ cents per pound; sugar (a clarified brownish sugar), 19 cents per pound; frijol, 50 cents per almud (6½ quarts); wheat flour, \$1.25 per arroba (say 5 cents per pound); soap (common), \$4.50 per arroba; tallow or lard, 31 cents per pound.

(6) Cows with young calves, \$20 to \$25; steers, three years and up, \$16 to \$20; wild horses, \$20; mares, \$8 to \$10; goats, \$2 to \$3; sheep and goats for \$3; hogs one year and up, \$2 to \$3.

(7) Lands can be bought for \$1,500 to \$2,000 per sitio (square league), without water; and lands subject to overflow or irrigable by the Naza River can also be purchased, but at high prices. The last sale made was at \$35,000 per sitio (square league, 4,438 English acres, 4,428 United States acres), which tract of land produces an annual rental of \$5,000.

(8) A machine to make oil from the cotton-seed, now used to feed cattle or burned, would pay. Nothing would be more profitable than artesian wells, and it would be a very profitable business to construct wells, as the land is very fertile, and only lacks water. A sitio which can be bought now for \$2,000 would be worth \$100,000 if it could only be watered once in the year. This is all that is needed to obtain good crops, as the soil is a very rich alluvial.

There is a small company here trying an artesian well, and all are awaiting the result.

It is not at all rare in this municipality, nor in all this Laguna country, for one fanega of corn to produce a thousand, and barley and wheat produce an hundred for one. A lot of ground of 1,200 varas square (250 acres) will often produce 1,000 quintals (101½ pounds each) of cotton unseeded, and even occasionally more, with one watering in the year. If it be possible to obtain water by artesian wells the benefits will be immense, and it will be possible to cultivate 1,000 sitios in this section which are now abandoned for want of water.

The overflow of the river Nazas could be utilized by dams and ditches on its way to the Laguna de las Hadas, where it empties.

J. GONZALEZ TREVINO.

HACIENDA DEL PILAR IN SAN PEDRO DE LA LAGUNA, June 26, 1885.

Hacienda of Rosario.

(1) Thirty-seven and a half cents per day.

(2) Properly speaking there are no contracts to secure the work of the laborer. The general custom is that the proprietor shall furnish a house in which to live, wood for cooking, feed for their domestic animals, and assign them \$6 to \$7 per month with two almuds of rations weekly. A month is thirty full working days.

(3) There would be no scarcity of hands were it not that many go to work during the busy season in the cotton-growing districts of the Laguna, or at times in the mines of the Sierra Mojada.

(4) Annual products, &c.: Wheat, 16,000 cargas (5 bushels) of 350 pounds; corn, 40,000 to 50,000 fanegas (2½ bushels) of 170 pounds; grapes, 60,000 to 70,000 baskets of 70 pounds. Of the grapes, some 50,000 baskets are used in making wine, and the remainder sold for eating. These grapes are probably the finest and best tasting in the country.

The usual prices are: Wheat, \$8 to \$10 a carga (5 bushels) of 350 pounds; corn, now \$5 the fanega (2½ bushels) of 170 pounds, but usually \$2.50 to \$3; grapes, 1½ to 2 cents per pound; wines, rich, 20 to 35 cents per liter; wines, common, 20 to 25 cents per liter; aguardiente, 35 to 40 cents per liter.

It is probable that in the beginning of this century the wine crop of this district was annually worth \$600,000, whereas it now is not worth one-fourth that sum.

(5) Beef and mutton, 20 ounces per real (12½ cents); corn, now 3½ to 4 reals per almud (6½ quarts), in former years one-half as much; frijol, \$1 per almud; wheat flour, 9 to 10 reals per arroba.

*The calabaza is a most useful vegetable, having all the good qualities of the squash and the pumpkin.

(6) Cows, \$15 to \$18; beeves, \$18 to \$20; work oxen, \$20 to \$25; mares, \$8 to \$10; horses, \$15 and upwards; mules, \$25; sheep, \$1.50; goats, \$1.25 to \$1.50.

(7) There have been no recent sales. Values depend upon the amount of water for irrigation. Pasture lands are valued at \$500 to \$1,000 per sitio.

(8) In this district are great quantities of lechuguilla (from which is made the ixtle of commerce), magney, and palms. These fibers could be profitably developed on a large scale. The land and climate are favorable to the production of the mezquite for its gum, and a rich flower, substantially the "flower of Castile," for perfumery, &c. Manufactures with hydraulic water-power could be established along the rapids or falls of the river.

The low prices of grapes, wines, and aguardiente are due to the lack of railway communication with the interior. To this may be added the slight protection afforded by previous tariffs by which foreign wines and liquors were introduced from France and Spain under such small duties that our products could not compete, notwithstanding their purity and good quality. Besides this were the alcabalas (local octroi dues) of the interior States, which applied to native and not foreign products. Another cause is that the towns along the northern border, in the Zona Libre, could import and freely consume foreign wines. This also obtains with corn and wheat, of which not a pound is sold in those towns that is not American. All those things have contributed to the decay of this district and of Monclova, with which towns, before the establishment of the Zona, we had a large trade in wines and cereals.

L. GONZALEZ TREVINO.

HACIENDA OF ROSARIO,
June 1 and June 24, 1885.

STATE OF DURANGO.

DISTRICT OF SAN DIMAS.

Municipality of Gavilanes.

- (1) Seventy-five cents per day. This is a mining district.
- (2) The rents of the land rather indefinite.
- (3) Scarce.
- (4) The principal agricultural product is corn, and it sells usually at \$4 the fanega (2½ bushels).
- (5) Corn, 50 cents the almud (6¼ quarts); meat, 12 cents per pound.
- (6) Meat, cattle, and horse stock at \$10.
- (7) No opportunity.
- (8) The only industries are agriculture and mining, both on small scale, and they might be developed successfully.

BLAS GARCIA.

GAVILANEY, July 28, 1895.

DISTRICT OF CUENCAMÉ.

Municipality of Cuencamé.

(1) The monthly wages of the workmen of this municipality are \$4, \$5, and \$6, beside a weekly ration of 1½, 2, or 2½ almuds (6¼ quarts each). The daily wages are 25 cents to 37 cents.

(2) Under the condition of showing that damages which the interests of the masters may suffer when committed to their care are due to unforeseen and inevitable causes and of being responsible for such damages if they are caused by their carelessness.

(3) There are sufficient hands.

(4) The principal agricultural products are corn, frijol, and wheat. The annual crops and wholesale prices are: Corn, 38,000 to 40,000 fanegas (2½ bushels each), at \$3; frijol, 6,000 to 7,000 fanegas, at \$2.50; wheat, 1,000 cargass (5 bushels each), at \$4.50.

(5) The retail price of corn is \$4.50 the fanega (2½ bushels); of frijol, \$7.50 fanega, and wheat, \$3 fanega.

(6) Neat cattle, \$12 to \$15; horse stock, \$8; sheep, \$3; hogs, \$2.50.

(7) There are no opportunities for acquiring private lands, and consequently no sales have been made.

(8) On the hacienda of Atotonilco de Campa factories for weaving and spinning, for making paper, &c., and also on the haciendas of San Marcos and San Antonio, on the river of Ojo Caliente, as all these fincas have enough water to run any motive power, whatever its dimensions and power might be.

The land and climate of this region are adapted to the growth of the mulberry tree, and silk culture, cochineal, beehives, for making wax, &c.

Caoutchouc grows in abundance in different parts of this district, large tracts of land being covered with this plant. This industry is completely unknown in these places; but it could be successfully planted, the gum produced from this vegetable being of a superior class, as has been demonstrated, its extraction yielding at least 75 per cent.

There exist also such textile plants as the *lechuguilla* (fiber plant), *maguay serrase* (mountain agave), and the palm. These three fibers are of a superior class, and of the plants which produce them there are known to be large mountains and great fields covered with them in several parts of this district.

The fabrication of grape wine and *aguardientes* (brandies) of all classes could be established, as there are all the necessary elements for production and a wide field for propagating on a large scale all kinds of crops which are needed to sustain any of the industries mentioned.

MANUEL M. UGARTE.

CUENCAMÉ, August 22, 1885.

STATE OF GUANAJUATO.

DISTRICT OF ALLENDE.

- (1) Nineteen cents per day.
- (2) The only conditions are that hands are employed as needed for the labor. This is more if the rainy season gives a good supply, and less if the rains are few.
- (3) No lack of hands in the country and an excess in the towns for lack of industries.
- (4) Principal products are corn and frijol, with much smaller quantities of wheat, potatoes, chile, *haba* (a kind of bean), and barley. It is not possible, even approximately, to estimate the annual crop, as this varies in a surprising degree, according to the rains. In this municipality the wells, ditches, &c., to irrigate, are not worth mentioning. Generally the agricultural products of this municipality are small, except in certain haciendas, which have a superior soil, in which are raised, in good years, some 200 fanegas of corn for one, 20 to 30 for one of frijol, and 20 to 30 for one of wheat.
- (5) Naturally the retail prices depend upon the amount of the crop, and vary from \$1 to \$3 or \$4 the fanega (2½ bushels) of corn; \$2 to \$10 or \$12 the carga (304 pounds) of frijol; meat, 6½ cents per pound generally. Most of the necessaries are cheap.
- (7) It is difficult to obtain lands. Some small sales have been made of fair lands for \$600 to \$800 the caballeria (107½ acres, English).
- (8) There are excellent deposits of kaolin, and porcelain works might be started with good chances of success. There is plenty of water and plenty of hands and fuel. The quality of the *loza* (crookeryware) is well known to those who have visited the manufactory (Niño Perdido) in this city.

The hand-work in wool, which in former times gave such renown to this locality, is now ruined by machine-made goods. This would show that good operatives may be found here: The principal thing, after the operatives, is the water, which nowhere else gives such colors, especially red and blue.

Mulberry trees, white as well as black, are admirably produced in this locality.

In Dolores Hidalgo, 8 leagues northeast, as is well known, the first leader of independence (Hidalgo) cultivated this industry with good results. Had this been tried in this locality the results would have been still more satisfactory, as I regard the climatic conditions more favorable for the worms than at Dolores Hidalgo.

FRANCISCO GALLÁSTEGUI.

SAN MIGUEL DE ALLENDE, June 22, 1885.

DISTRICT OF DOLORES, HIDALGO.

- (1) There is a variation which is necessary to explain in regard to the wages which are paid to field hands. Those called *jornaleros*—day laborers, who are occupied exclusively in *labores* (fields) and in other small jobs—earn only 18 cents per day; those employed as overseers, who are honest and rather more intelligent, earn 25 cents; and other servants, such as *mayordomos* (stewards or superintendents), *caporales* (keepers of neat cattle), cowherds, oxherds, cartmen, muleteers, and others earn other wages, which are conventional, paying according to their honesty, intelligence, and knowledge of the work in which they are employed.

- (2) Contracts, as has been stated, are personal and for an indefinite time, until such time as the workmen or employer finds it convenient to terminate them.

(3) There are not sufficient hands for the necessary work; as when the workmen have enough to live on they do not care to work, because they are a people of few aspirations and live with few resources, without a desire or an effort to supply even their greatest necessities.

(4) The most abundant product and on which the attention is exclusively fixed is corn in immense quantities; for in a fair year it may be said that this crop has no price, it being so low. Wheat is also produced in abundance; but as it requires irrigation and it is harvested with difficulty, as hands are scarce, it is raised in smaller quantities; still it is never entirely lacking, and its price hereabouts, one year with another, does not exceed \$6 or \$7 a carga of 14 arrobas (370 pounds); at present, as it has been somewhat scarce for two years, owing to the lack of water, its price has gone up to \$10.

(5) The retail prices are: Of meat, \$1.50 to \$2 the arroba (25½ pounds); corn, \$2.50 to \$3 the carga (5 bushels); frijol, \$4 to \$5; and when the corn and frijol crops fail, the prices are double those of the present.

(6) Neat cattle, \$15 to \$20; horse stock, \$3 to \$10, with the exception of broken horses, which are worth more or less according to the quality; sheep, \$1.25 to \$1.50; the price of hogs is in proportion to their class and the value of corn; that is, half their price is that of an arroba of corn.

(7) The acquisition of private lands depends entirely upon circumstances, and for this reason no exact opinion in regard to it can be formed.

(8) Many different kinds of industries could be successfully established here, where it may be said none exist, but capital and intelligence would be necessary.

MANUEL M. ABASOLO.

DOLORÉS HIDALGO, July 14, 1885.

STATE OF GUERRERO.

DISTRICT OF ALDAMA.

(1) Twenty-five cents per day.

(2) No special contracts.

(3) Not an overplus.

(4) Corn, frijol, and on a much smaller scale chile, nuts, *jiçami* (a farinaceous root, *Bumelia solmsifolia*), *camote* (sweet potato), sugar-cane, platanos, peaches, pears, oranges, limes, mamey, agnacate, &c.

(5) Prices are: Corn \$1.50 to \$2 carga of 96 cuartillas (say 80 quarts); frijol, \$9 to \$10 for same quantity.

(6) Beeves, \$10 to \$20; fat hogs, \$1.25 to \$1.50 arroba (25½ pounds).

(7) Lands may be bought in small lots.

(8) There are a few places where aguardiente is made on a very small scale for local consumption. Some soap is also made, and a few skins are tanned.

LUIS G. CÁCERES.

TEOLOAPAN, July 31, 1885.

DISTRICT OF TABARES.

(1) Nineteen cents and 25 cents per day, and \$3 to \$6 per month.

(2) No special contracts.

(3) Scarce.

(4) Principal products are corn, frijol, rice, and cotton. We also raise potatoes, other vegetables, and fruits. Some of the latter we are sending to San Francisco, California, in the United States, such as lemons, oranges, and pineapples.

(5) Prices are as follows: Corn, \$18 carga of 24 almudes (say 156 quarts); frijol, \$18 for same quantity; rice, \$12 for carga of 12 arrobas (say 78 quarts); flour, \$25 for same; salt, \$3.75 for same; sugar, \$39 for same; *panocha* (orude sugar), \$5.50 for same; lard, \$3.75 arroba (25½ pounds); butter, 50 cents per pound; potatoes, 6 cents per pound; eggs, \$2.25 gross; mezcal, \$1.25 gallon; pork and beef, 6 cents.

(6) There is no definite price.

(7) Not much chance to buy good lands.

(8) Agriculture is in a languishing state because of the locusts which visited this district last season. This causes a scarcity of cotton, corn, and frijol, but we hope for better crops this year. If the locusts eat up the first seeding, it is not to be feared or expected that they will also eat up a second seeding. On the contrary, this second seeding will likely bring a good crop. An important industry is the raising and shipping to the United States, by way of San Francisco, of our oranges, limes, pineapples, &c. With capital this could be greatly increased. Fresh lemons for this export now sell at \$5 carga (5 bushels); pineapples, 75 cents a dozen; platanos, mangoes, oranges, &c., \$1.

FRANCISCO GONZALEZ.

ACAPULCO, July 30, 1885.

STATE OF HIDALGO.

DISTRICT OF TULANCINGO.

Hacienda of Huapalcalco.

(1) The price paid regular laborers (*calpaneros*) is 25 cents per day. Others occasionally get 31 cents to 37 cents.

(2) The contract between the proprietor and the peon is verbal, is traced back to most ancient times, and is as follows:

The peon obliges himself to give his labor faithfully for one year to the proprietor, who gives him supplies or money in Holy Week. As his wages the peon receives the said sum of 25 cents per day, money or clothing in Holy Week and All Saints' Day, besides other amounts for baptisms, sicknesses, or deaths, and rations of 12 cuartillos (say 10 quarts) of corn, and the 25 cents in silver. The corn is charged to him at the rate of \$4 the carga, whatever may be the selling price. He is also allowed ground sufficient to sow say 2½ quarts corn, which he works on his own account and the product of which is for his own use. His debt to the proprietor is paid in sums of 50 cents per week, or less if there be not much labor. He will get his ration of corn, however, if there is only one day's work for him in the week.

(3) A scarcity of hands has been felt for some years, and more especially during the last six years, because of the railway building. The higher price paid for this work has caused many peons to emigrate, seeking for this work. The introduction of machinery will go far to supply this scarcity of labor, and already many have purchased some machines as an experiment. We have not yet obtained and studied a corn-planter which might be suitable for this soil and manner of cultivation. If one such could be obtained our agriculture would be greatly changed, and we might compete with other districts less expensive than ours.

(4) The principal products are corn, barley, wheat, sugar-cane, and chile. The annual crop and value are about as follows: Corn, 100,000 cargas (5 bushels), at \$3.50 to \$4 carga; barley, 15,000 cargas, at \$2.50 to \$2.75 carga; wheat, 3,000 cargas, at \$8.50 to \$9 carga; *piloncillo* (crude sugar), 9,000 arrobas (25½ pounds), \$4.50 to \$5 carga; chile (two kinds), 2,000 cargas, at \$3.50 to \$4.50 arroba.

(5) Retail prices are as follows: Meat, \$2.50 to \$2.75 arroba (25½ pounds); corn, \$5 to \$5.50 carga (5 bushels); frijol, from the interior, 25 cents cuartilla (.83¼ quart); frijol (black), 9 cents cuartilla; rice, 4½ cents pound; lard, 18½ cents pound.

6. Beeves are scarce and prices vary: Cows, \$20 to \$25 head; oxen, \$30 to \$35 head; steers, young, \$10 to \$12 head; sheep, \$3 to \$5 head; hogs, fat, \$2.25 the arroba (25½ pounds).

(7) It is difficult to obtain lands except at very high prices. The last sales made within the last three years were at the following prices:

One hacienda of 22 to 23 fanegas of irrigated land (say 207 acres, English), as much more not irrigated, potreros of irrigated land (a potrero is a portion of land surrounded on three sides by water and of indefinite extent), a small piece of woods containing 12 or 13 caballerías (a caballería contains usually 107½ acres, English), was sold for \$30,000. Another, of 13 fanegas of irrigated lands (say 117 acres) and a small potrero of tillable land, but not irrigated, for \$13,000; and other small pieces of irrigated land of 1 fanega (say 9 acres) or less at the rate of \$1,200 the fanega.

(8) The following industries which do not exist might be profitably established: A factory to make *manta* (a coarse cotton cloth), which might be sold in the many towns of the Sierra; a machine to make screws or nails, which could use the magnificent iron made at San Miguel; factory for furniture, &c., to make use of the many fine woods in this Sierra, and others which do not now occur to me.

A. DEL VILLAR.

HACIENDA OF HUAPALCALCO, July 7, 1885.

DISTRICT OF ZACUALTIPAN.

Municipality of Nanguitstengo.

(1) Eighteen cents per day.

(2) The conditions are, that the agriculturist shall pay 50 cents to the *gañan* (day laborer), and 18 cents to the *jornalero* (also a laborer), in exchange for six hours of work per day. Work is also done by the job and by the month; in the latter case the wages vary between \$4, \$5, \$6, and sometimes \$7.

(3) In this town lands are scarce, but not in the other towns and ranches of this municipality.

(4) The principal agricultural products are, corn, frijol, *arrejón* (chickling vetch),

pilon (brown sugar), and barley. The annual crop of corn is about 36,000 *cargas* (5 bushels each); frijol, 6,000; arrejón, 1,200; *pilon*, 12,000 *arrobas* (25½ pounds each); and barley 1,200 *cargas*. The usual price of corn is \$4 a *carga*; frijol, according to quality, varies between \$3, \$3.50, and \$4 the *fanega* (2½ bushels); arrejón, \$4 the *carga*; *pilon*, 50 cents the *arroba* (25½ pounds); and barley, \$3 the *carga*.

(5) The retail prices of the principal articles of consumption are: Corn, 50 cents the *cuartilla* (.83+ quart); frijol, 6 cents the *cuartilla*; flour, \$2 the *arroba* (25½ pounds); beef, \$1.75 the *arroba*; pork, \$1.50; lard, \$4; eggs, 10 cents a dozen; salt, 25 cents the *cuartilla*; sugar, \$3 the *arroba*; and *piloncillo* (brown sugar), 3 cents pound.

(6) Neat cattle, \$10; horse stock, \$15; sheep, \$1; and hogs, \$3 as an average price.

(7) Private lands can be acquired with facility, and the prices of the latest sales are \$370 for a *caballería* (107½ acres, English).

(8) The cultivation of cotton, indigo, coffee, almonds, yucca for starch, and factories for making paper and earthenware, as textile plants and kaolin are abundant.

J. OLIVARES Y HERNANDEZ.

TIANGUISTENGO, July 4, 1885.

STATE OF JALISCO.

Municipality of Union de Tula.

(1) Day laborers receive 25 cents per day, and regular hired hands \$5 monthly and a weekly ration of 5 *almudes* (33 quarts) of corn, three-fourths of an *almud* of frijol, and 3 ounces of salt.

(2) When the workmen receive an advance of \$8 to \$15, they get \$5 and rations: when they do not receive the advance, they get 25 cents without any ration.

(3) There is an abundance of field hands, and during the year many laborers go from here to the coast and other places in search of work.

(4) Corn, frijol, *chile* (a pepper), wheat, barley, peas, sugar-cane, *camote* (a kind of sweet potato), and potatoes. Their annual crops and the prices at which they usually sell are as follows: Corn, 80,000 to 100,000 *fanegas* (2½ bushels), at 75 cents to \$1; frijol, 1,500 *fanegas*, at \$1.50 to \$6; *chile* of all classes, 500 *arrobas* (25½ pounds), at \$1.50 to \$2.50; wheat, 1,000 *cargas* (5 bushels), at \$9 to \$15; barley, 100 *cargas* (5 bushels), at \$3 to \$4.50; chickpeas, 150 *fanegas* (2½ bushels), at \$1.50 to \$2.25; peas (included in the preceding article), \$4 to \$6 the *fanega*. Sugar-cane produces 100 *arrobas* (25½ pounds) of sugar, and 100 *cargas* (of 10 *arrobas*) of *panocha* (crude sugar), the price of the sugar being \$2.50 the *arroba*; that of the *panocha* (crude sugar), \$8 to \$10 the *carga*; *camote* (sweet potatoes), 800 *arrobas*, at 25 to 37 cents the *arroba*; potatoes, 600 *arrobas*, at 37½ cents to \$1.12½.

(5) The retail prices of the principal articles of consumption are as follows: Corn, \$1 to \$1.88 the *fanega* (2½ bushels); frijol, \$2.25 to \$9 the *fanega*; meat, \$1.88 to \$2.25 the *arroba* (25½ pounds); bread, 6 cents per loaf weighing from 6 to 8 ounces; tallow, 9 cents to 10 cents pound; sugar, 12 cents to 18 cents pound; *panocha* (crude sugar), 4 cents to 6 cents pound, soap, 12 cents to 15 cents pound; milk, 2 cents to 3 cents the *cuartilla* (0.805 pint); salt, 3 cents to 6 cents pound; tallow candles, 18 cents to 20 cents pound; wood, 18 cents the *carga* of 32 pairs (64 sticks); *ocote* (a wood allied to the pine), 12 cents the *arroba* (25½ pounds); charcoal, 50 cents the *carga*; coffee, 25 cents pound.

(6) Neat cattle, 1 to 4 years, \$9; horse stock, \$10 to \$15; sheep, 75 cents to \$1.25; hogs, \$2 to \$2.50.

(7) There is no opportunity for acquiring private lands. The prices of the latest sales have been \$2,000 a *sitio de ganado mayor* (4,338 acres, English), including good land for tillage, and pasture, and wood, and timber.

(8) Mezcal (*maguey*) plantations.

MANUEL MORENO.

UNION DE TULA, July 12, 1885.

CANTON OF LAGOS.

Municipality of Ojuelos.

(1) Laborers are divided into two classes, the rentors and the *acomodados*. The first receive 18½ cents, and the second 12½ cents, and a ration of two *almudes* (say 13 quarts) of corn every six days.

2. The only stipulations are that work shall continue from sunrise to sunset. Wages are paid in money in the neighborhood of this village only; in the other places in this municipality they are paid in effects.

(3) There is no scarcity of laborers, and especially in this year, when, owing to the high price of corn, planters have confined themselves almost entirely to this crop.

(4) The principal products are sheep, goats, cows, mares, asses, and mules. The crops of corn, frijol, wheat, barley, and chile never fail, and are in greater or less abundance according to the amount of rain. The *tuna* (pear or fig from cactus) cardona, and dates are also produced.

In good years the crop of corn in this municipality reaches 1,000 fanegas (2½ bushels), and, although the price sometimes goes as low as 50 cents per fanega, the average price is from \$1 to \$1.50; frijol up to 40,000 fanegas and sells at same rates. Wheat, 2,000 cargas (5 bushels) at \$6 to \$7. The crop of barley, which is not much liked by agriculturists, varies greatly, and the ordinary price is 75 cents per fanega; *chile colorado* (pepper, red,) 1,500 arrobas (25½ pounds), ordinary price \$3 per arroba. The tuna crop is valued at \$3,000; and the date crop is worth less, as proprietors have lately allowed those to gather who wished.

The annual increase of the sheep is about 25,000 head, and are valued at about \$1 for ordinary and \$2 for fat ones; goats about the same; neat cattle about 2,000 annually, and are worth \$12 for a cow to \$15 for a bull or ox; horse stock, an annual increase of about 1,000. Horses are worth from \$10 to \$300; mares, \$6 to \$8; mules, according to height, from \$20 to \$50.

(5) Ordinary retail prices: Meat, 6 cents pound; corn, \$1.50 fanega (2½ bushels), except in years of calamity, when the price reaches \$12; frijol, same as corn; flour, 6 cents pound; rice, 7½ cents pound; sugar, 15 cents pound; peas or chickpeas, 50 cents almud (6¼ quarts); tallow, 25 cents pound; coffee, 22 cents pound; *dulce* (sweets), 7 cents pound.

(6) Hogs ordinarily \$3 per head when grown.

(7) It is not easy to acquire lands, and the latest sales were at \$300 the caballeria (107½ acres, English).

(8) Any improvement in agriculture would be of immense benefit to this locality, especially improved stock and tanks for holding water.

DOMINGO MACIAS.

OJUELOS DE JALISCO, July 4, 1885.

CANTON DE AMECA.

Municipality of Cocula.

(1) Workmen of this municipality earn 25 cents per day, or \$5 per month, with a weekly ration of four almudes (6¼ quarts each) of corn, one-half almud of frijol, and one or two pounds of salt.

(2) Contracts for the corn and frijol crops are made by advancing to the hands two or three months' wages before the work is begun, which they pay as soon as they can conveniently.

(3) There are sufficient field hands.

(4) The principal agricultural products are corn, frijol, and sugar-cane. The annual crops and usual prices are: Corn, 70,000 fanegas (2½ bushels each), at \$1; frijol, 4,000 fanegas, at \$2.50; sugar, 15,000 arrobas (25½ pounds each), at \$2.50; *panocha* (crude sugar), 300 cargas (304½ pounds each), at \$8.

(5) The retail prices of the principal articles of consumption are: Beef, 6 to 8 cents per pound; corn, 5 to 6 cents per almud (6¼ quarts); frijol, 12 cents per almud.

(6) Neat cattle, \$10 to \$18; horse stock, \$6 to \$20; sheep, scarce, \$1; hogs, not fattened, \$1.50; fattened, at 10 cents per pound.

(7) There is no facility for acquiring private lands, and in the sales which have been made lands of good quality sold at \$100 fanega (say 9 acres); second class at \$60, and uncultivated land at \$25.

(8) As the lands of this municipality have not been sufficiently explored nor worked, it cannot be determined what industries could be successfully established beside those which already are.

ANDRES TERAN.

COCULA, June 29, 1885.

STATE OF MEXICO (FEDERAL DISTRICT).

Municipality of Tlalnepantla.

(1) Thirty-one and one-fourth cents per day.

(2) No contracts are made, and workmen are paid according to the days they have worked.

(3) At present there are enough hands; for which reason the wages of the peons

have been reduced to the aforementioned sum; but it should be remarked that on the haciendas gangs of workmen from other localities are employed at 37½ cents per day.

(4) Corn, wheat, frijol, and barley. The annual crops and the prices are as follows: Corn, 5,500 cargas (5 bushels), at \$5 the carga; wheat, 1,570 cargas (5 bushels), at \$8 the carga; frijol, 200 cargas (5 bushels), at \$8 the carga; barley, 500 cargas (5 bushels), at \$3 the carga.

(5) The retail prices are: Corn, \$6 carga (5 bushels); meat, \$2 arroba (25½ pounds); frijol, \$15 carga; lard, \$4.50 arroba; flour, \$1.25 arroba; *chile pasilla* (pepper, dried), \$4.50 to \$5; *chile ancho* (pepper, dried), \$4.25 to \$4.50; rice, \$5 quintal (101½ pounds); peas, \$10 to \$14 carga; sugar, \$2 arroba; coffee in the berry, \$3 arroba; wheat straw, 15 cents to 18 cents arroba; milk, 50 cents to 62 cents jarra (say 8 quarts); charcoal, 75 cents to \$1.50; pulque, 62 cents cubo (pail); *aguardiente* (a brandy), \$15 barrel.

(6) Neat cattle, \$40; horse stock, \$15; sheep, \$2; hogs, \$3.

(7) It is difficult to acquire private lands, and the prices of latest sales are about \$40 *tierra de temporal de tres cuartillos de sembradura de riego*, \$20 *de temporal*, y \$10 *de pastal ó irpetatoso*, say \$40 for irrigated land sufficient to seed three cuartillos (2½ quarts); \$20 for same quantity of tillable land not irrigated, and \$10 for pasture or stony land.

(8) No industry could be successfully established here.

V. TORRES.

Tlalnepantla, June 30, 1885.

Municipality of Zaragoza.

(1) Usually 31 cents per day, but when workmen are scarce, through the demand for railroad hands, 34 cents to 37 cents are paid.

(2) Field hands contract to work from 6 a. m. until 6 p. m., stipulating that their wages shall be paid weekly, one-half or one-third in the middle of the week and the remainder at the end of it. Contracts are not made in writing.

(3) There is a sufficient number of field hands; they are only scarce for the reason expressed in the first answer.

(4) The principal agricultural products, the annual crop of each, and their usual selling prices are as follows: Corn, 3,000 to 3,500 cargas (5 bushels), at \$5 to \$6; barley, 400 to 500 cargas (5 bushels), at \$3 to \$3.50; frijol, 150 to 200 cargas (5 bushels), at \$10 to \$12; wheat, 400 to 500 cargas (5 bushels), at \$6 to \$7; maguey (*michinastile*), 100,000 to 150,000 plants, at \$10 per thousand.

(5) The prices of the principal articles of consumption are as follows: Corn, \$6.50 to \$7 the carga (5 bushels); frijol, \$16 to \$18 the carga (5 bushels); barley, \$3.50 the carga (5 bushels); lard, \$4 the arroba (25½ pounds); flour, \$1.25 the arroba; beef, \$2.25 the arroba; pork, \$2 the arroba; *chile pasilla* (dried pepper), \$4.50 to \$5 the arroba; *chile ancho* (dried pepper), \$4.25 to \$4.50; rice, \$5 the quintal (101½ pounds); peas, \$10 to \$14 the carga; sugar, \$2 the arroba; coffee in the berry, \$3 the arroba; wheat straw at 15 cents and oat straw at 18 cents the arroba; milk 50 cents to 62 cents the jarra (say 8 quarts); charcoal of *madroñero* (strawberry tree), 75 cents to \$1.12 the carga; charcoal of *encina* (evergreen oak), \$1 to \$1.50; pulque (a drink), 62 cents the cubo (pail); *aguardiente* (brandy), \$15 per barrel.

(6) The price of neat cattle is as follows: Work-oxen, pair, \$50 to \$60; single, \$20 to \$25; milch-cows, common, \$12, and from that price up to \$100, according to class. Horse stock, \$10 and upwards, according to class. Sheep and goats, \$2 to \$5. Hogs are sold by weight, \$1.50 to \$2 the arroba.

(7) There are no opportunities for acquiring private lands.

(8) Vineyards and the extraction of the fiber of the ixtle would give good results. For these there are sufficient and suitable lands. All that is lacking is to know how to cultivate the vines and to have machines to extract the fiber of the ixtle.

F. M. ALCÁNTARA.

Atozapan de Zaragoza, July 8, 1885.

STATE OF MICHOACAN.

District of Zamora.

(1) Usual price, 25 cents; in exceptional cases this is increased to 31 cents.

(2) Raising corn on shares: The owner furnishes land, seed, *coyundas* (the leather thongs by which the oxen's horns are tied to the yoke), and plow, and advances 25 cents per week or four fanegas (say 10 bushels) of corn, which is repaid at harvest. The laborer cares for the ground from first plowing until the crop is matured. The

cost of gathering is divided equally, the owner furnishing transportation from the field to the hacienda, where the crop is divided into two equal parts. The stalks, husks, &c., belong to the owner, the laborer being, however, permitted to gather what he needs for his oxen when grass is scarce. Ground for peas or chickpeas is given under the same conditions.

Cutting wheat: This is given out in *tareas* (tasks) of 60 varas on each side, or 3,600 square varas, for 25 cents. If the workman ties up the bundles (or shocks), he gets a real (12½ cents) extra. (The grain is cut with the sickle.)

Ditches and banks: These are given out in tasks according to dimensions.

(3) Generally there are hands sufficient. The only times when there is a scarcity are when crops ripen at the same time in all the fincas.

(4) The principal products are wheat, corn, chickpeas, frijol, and lentils, which suffice for home consumption. When crops fail in neighboring States the surplus is sent there; otherwise it is fed to neat cattle and hogs. It is very difficult to calculate the total product of this district without making a great error, as there are no data from which to estimate.

(5) Retail prices in ordinary years: Corn, fanega (2½ bushels), \$1.50; frijol, fanega (2½ bushels), \$2.75; chickpeas, fanega (2½ bushels), \$1.50; flour, carga (304 pounds), \$8; lard, arroba (25½ pounds), \$3; meat, arroba (25½ pounds), \$1.50.

(6) Cows with calves, \$25 to \$30; cows, farrow, \$20 to \$25; steers and heifers, \$12 to \$18; work oxen, \$25 to \$30; mares, \$8 to \$10; sheep, \$1 to \$1.25; hogs to fatten, \$4.

(7) In this district land is greatly divided, and there are very few fincas of much extent. It is not easy to acquire lands, except on a small scale. Irrigable (irrigated) land may be computed at \$3,000 to \$4,000 per caballeria (107½ acres, English).

(8) As this district has plenty of water-power, manufactories of fabrics, paper, &c., might be established.

EPIFANIO JIMENEZ.

ZAMORA, June 29, 1885.

DISTRICT OF TACÁMBARO.

(1) Twenty-five cents per day, working from 6 a. m. until 6 p. m. when engaged in the cultivation of corn, wheat, &c., and from 6 a. m. until 3 p. m. in the cultivation of sugar-cane.

(2) Only in the temperate or hot part of the municipality are conditions for work established, and they are known by the name of *tareas* (tasks), some of the more industrious workmen being able to do two *tareas* in one day, receiving 25 cents a *tarea*.

(3) From July to October hands are scarce in the temperate lands, although not to the extent of losing the crops.

(3) The following are the principal products and their prices: Sugar, 15,000 arrobas (25½ pounds each) at \$2; *piloncillo* (brown sugar), 20,000 cargas (304 pounds each), \$8 to 10; corn, 60 fanegas (2½ bushels), at \$2; wheat, 1,500 cargas (5 bushels each), at \$6; frijol, 1,000 fanegas, at \$5; potatoes, 12,000 arrobas, at 18 cents to 25 cents; *camote* (a kind of sweet potato), 2,000 arrobas, at 18 cents to 25 cents; fruits in general, 100,000 cargas.

(5) Beef, \$1.50, \$1.87, and \$2.25 the arroba.

(6) Neat cattle, \$15; horse stock, \$10 to \$15; sheep, \$1; hogs, \$2 to \$5.

(7) In the cold and temperate part of the municipality property is in very small portions, and it would not be easy to purchase. However, the property of the natives is being divided, and these portions, which are 400 in number and contain from 100,000 to 250,000 square varas each, may be purchased for \$100.

In the hot part, not being suitable for the cultivation of sugar-cane, the lands are of less value and many pieces can be purchased with facility for \$500 to \$2,000 the sitio de ganado mayor (4,338 acres English), which are now used for stock-raising.

(8) The silk-worm culture.

In the limits of the district of Morelia and this district there is a place called Cerro Blanco, where iron is found in abundance, and there an iron foundry might be established with good results. It is on private property, and the owner permits those who have portable forges to extract it, receiving a small remuneration.

The work given to this metal consists in taking a pile of stones, submitting them to the fire, and at a certain degree of heat beating them with mallets to separate the stone from the iron, which, notwithstanding the imperfection of the process, is of good quality. Its price in this town, 7 leagues away from the bed, is \$5 to \$6 the quintal (101½ pounds).

There are also streams of water sufficient to afford motive power to a considerable amount of machinery without detriment to agriculture, and forests of good wood for supplying saw-mills. A bed of iron is situated about midway between Morelia and Patzenaro, on the railway, which is being built, and about 8 leagues to the south, and the National Railway Company or any other could make a financial success by establishing an iron foundry there.

JACINTO PEREZ.

TACÁMBARO, July 7, 1885.

DISTRICT OF TARETAN.

(1) Thirty-one cents in the *cabecera* (capital) of the municipality and 25 cents elsewhere; that is in Tingambato, San Angel, and Ziracuaretiro.

(2) The families of the workmen group themselves round about the haciendas; they have the use of land enough to build their houses on and a small portion to cultivate; they receive a small daily payment for their work, and the remainder at the end of each week. The improvements made on their lots are left to benefit the hacienda when they leave.

(3) There are sufficient workmen at present; and in proportion as the work increases the workmen are attracted, the inducement for their immigration being the relative comforts for living, the abundance and cheapness of food, and the facility for obtaining fruits for domestic use on the small piece of land which is assigned each family.

(4) The principal products, their annual crop, and average price, are as follows: Sugar, 200,000 arrobas (25½ pounds each), at \$2; *piloncillo* (brown sugar), 100,000 cargas (304 pounds each), at \$10; *purga de azúcar* (black molasses), 50,000 cargas, at \$3; alcohol, 32° Cartier, 4,000 barrels, at \$12; *aguardiente holando* (resembles Holland gin), 22° Cartier, 6,000 barrels, at \$7; coffee, 500 arrobas (25½ pounds each) at \$10 the quintal (101½ pounds); rice, 1,000 cargas, at \$5; bananas, 30,000 cargas, at \$1; oranges, 2,000 cargas, at \$1.50; mangoes, 1,000 cargas, at 50 cents; *zapote* (sweet sapota), 1,000 cargas, at 50 cents; aguacate, 6,000 cargas, at 30 cents; *mamey* (fruit of the mamee tree), 200 cargas, at \$3; other fruits, 1,000 cargas, at 50 cents; tanned beef hides, 1,000, at \$3.50.

(5) The retail prices are: Meat with bone, 6½ cents the pound; meat without bone, 12½ cents the pound; fillets and sirloin, 18 cents the pound; corn, 18 cents to 25 cents the almud (6¼ quarts); frijol, 50 cents the almud; lard, 12½ cents the pound; bread, 12 ounces for 6½ cents. Groceries brought from Mexico sell at an advance of 50 per cent., clothing at 30 per cent.

(6) But little stock raised here; but hogs are abundant and are only imported when the price is high. Imported stock sells as follows: Fat cows and steers, \$14; work oxen, \$20 to \$25; veals, \$1.50; mules in lots, \$20 to \$30; hogs, usually live weight, \$1.12 arroba (25½ pounds).

(7) There is no chance to buy land, because nearly all belongs to the sugar planters, who will not sell; and those small pieces planted to fruits are so very productive as to raise the value to a high price. A lot of 100 varas square is held at \$500 or more, and lands or gardens of this size that are held at less rates, lack water or some other quality.

(8) The ramie plant would do well anywhere in this district; in the north, silk-worms, and in the south, indigo. Manufactories of paper, cloths, bricks, oils, citric acid, and improved methods of cultivating the tropical fruits which grow almost spontaneously.

J. M. FRANCO.

URUÁPAM, June 22, 1885.

STATE OF MORELOS.

DISTRICT OF TETECALA.

Municipality of Tlaquiltenango.

(1) Daily wages, 37 cents; boys, 25 cents; and by tasks (or *tareas*), 50 to 75 cents.

(2) Those who work by the day, work from 6 a. m. to 6 p. m., with a rest at breakfast and dinner. The method of paying by tasks is preferable, as the workmen earn more, need less watching, and the work is more quickly and better done.

(3) There are sufficient, and in August and September an excess.

(4) Principal products are: Sugar-cane, rice, corn, frijol, camote, plantains of various classes, watermelon, and muskmelon. The three first are most cultivated. The average annual products are: Sugar, 120,000 arrobas (25½ pounds); *panocha* (a crude sugar), 14,000 arrobas; molasses, 362,000 arrobas; corn, 10,000 fanegas (2½ bushels); rice, 75,000 arrobas.

(5) Retail prices: Sugar, 7½ to 9 cents per pound; molasses, 25 cents an arroba; rice, 50 cents a pound; meat, 12½ to 15 cents a pound; *aguardiente* (refined), \$1.25 a jarra (½ barril); mezcal, with savor very much like gin, \$1 a jarra; frijol, 9 cents a cuartillo (¼ quart); salt, 6 cents a pound; cheese, 30 cents a pound; wheat bread, 24 ounces for 12½ cents; chile, 25 cents a pound; milk, 6 cents cuartillo; butter, 25 to 50 cents a pound; lard, 18 to 25 cents a pound; fire-wood, dry, 37½ cents for carga of 12 arrobas; charcoal, 20 cents arroba (25½ pounds).

(6) Work oxen, \$40 to \$50; bulls, three to four years, \$15; heifers, with calf, \$16; veals, \$10 to \$12; breeding mares, \$12 to \$14; horses, \$20 to \$30; sheep and goats \$1.50 to \$1.75; hogs, thin, \$2 to \$3; fat, on foot, \$1.50 per arroba (25½ pounds).

(7) There are difficulties in obtaining lands. Prices vary with the quality of the soil and the quantity of water available for irrigation. The usual unit for sales of irrigated lands is the *tarea* (task of 1,000 square varas); and the value when there is water enough to cultivate rice, is from \$15 to \$20 *tarea*. Dry lands on which to raise a crop of corn in the rainy season are worth \$1 the *tarea*; and grazing lands \$500 a *caballeria* (107½ acres English).

(8) There are abundant crude materials for the manufacture of paper, cloths, iron implements, &c. Silk culture, indigo, mining, and the manufacture of wines and confections from native fruits, such as guayaba, cocoa, pineapple, mamey, &c., are possible industries.

Public instruction is urged and the lack of social clubs deprecated.

Under the head of "institutions of credit," the writer proceeds:

In former times the clergy, which possessed millions, had in each *jusgado* (court) a record of loans made to the proprietors at low rates of interest and for long terms, who were thus enabled to raise money to improve their properties. Lately the National Bank has been established, but this is of very little value to us in this section, as the terms of credit are short, interest is high, and it is difficult to effect loans with it. We had hoped much from the establishment of the Mortgage Bank, thinking that we could thus realize the values of our properties by means of the notes of this institution.

In this locality loans of \$100 to \$1,000 can only be made at 2 to 3 per cent. per month, from which cause many have been ruined, and many others sit with crossed hands rather than attempt new enterprises for which they have not sufficient ready means.

The subdivision of the national lands and their apportionment to individual owners would be of great value.

CRESCENCIO REYNA.

TLAGUILTENANGO, June 28, 1885.

STATE OF NUEVO LEON.

(1) Twenty-five cents to 50 cents per day, \$4 to \$8 per month, and a ration, usually an almond (6¼ quarts), of corn weekly.

(2) Contracts are made for various periods. Advances are often made.

(3) Plenty of hands, but often a scarcity of laborers.

(4) Principal products are corn, sugar-cane, sugar, piloncillo, molasses, beans, cotton, tobacco, wheat, vegetables, fruits, &c. The following table gives approximately the products for the year 1882:

Corn, fanegas (2½ bushels), 397,840	\$971,620
Piloncillo, cargas (304 pounds), 36,290	434,900
Maguey, plants, 1,049,000	550,000
Sugar-cane, stalks, 234,264	265,492
Ixtle, arrobas (25½ pounds), 93,950	93,950
Fodder and straw, cargas, 304,700	79,775
Mezcal, arrobas (2.8 gallons), 23,450	75,830
Vegetables, arrobas (25½ pounds), 5,900	46,000
Sugar, arrobas, 13,000	38,000
Onions, arrobas, 156,490	33,935
Frijol, fanegas, 7,562	25,676
Sweet potatoes, rows, 61,550	24,050
Potatoes, \$4,550; barley, \$21,020; beeswax, \$16,500; wheat, \$9,420; tobacco, \$6,800; miscellaneous, \$4,820	63,110

Total 2,702,388

(5) The retail prices are generally stated at an increase of 25 per cent. on the prices given under No. 4. In partial failures these prices often rise to 100 per cent.

(6) Neat cattle, \$6 to \$20; horse stock, \$5 to \$50; mules, \$15 to \$35; asses, \$5 to \$10; sheep, \$1 to \$2; goats, \$1 to \$2; hogs, \$1 to \$5.

(7) It is difficult to buy lands, and those sold are at greatly varying prices.

(8) Artesian wells and tank building would greatly develop the capacity of the lands.

With more care and water the present fruit product could be greatly increased, and the surplus sent to the United States.

MONTEREY, August and September, 1885.

STATE OF OAZACA.

DISTRICT OF POCHUTLA.

Municipality of San Pedro Pochutla.

- (1) Twenty-five cents per day.
- (2) No conditions.
- (3) Hands are generally scarce, as the neighboring population, although considerable, is engaged in its own agricultural labor in the wet season, as well as the dry. During the dry season the crops of the wet season are cultivated; these are the surest, as then the locusts do not destroy the crops.

(4) Corn, frijol, arroz, *chile* (pepper), *calabaza* (a sort of squash or pumpkin), watermelons, salt, cotton, and tobacco.

The annual crops and prices are as follows: Corn, 2,000 fanegas (2½ bushels), at \$3; frijol, 200 fanegas (2½ bushels), at \$6; rice, 300 arrobas (25½ pounds), at \$1.50; *chile*, 300 fanegas, at \$3; salt, 2,000 fanegas, at \$3; cotton, 6,000 fanegas, at \$1; tobacco, 500 fanegas, at \$3.

The crop of *calabaza* (squash-pumpkin), as also that of watermelons, is uncertain. In some years it is large, and in others there is no crop.

(5) The retail prices were given in the preceding paragraph; and in regard to meat, it is not sold by weight, but by measure, in pieces, 1 Spanish vara (33 inches English) in length, 2 inches wide, and 5 centimeters in thickness.

(6) Neat cattle, \$20 to \$30; horse stock, \$15 to \$25. No sheep are raised, on account of the hot temperature.

(7) There is a very limited amount of *terrenos comunales* (communal lands), and the inhabitants of this town generally occupy them by title of personal services, with their crops and stock. It would be very difficult to change them to private lands, or to estimate their value, as no sales have been made, with the exception of a few coffee plantations, which are adjudged or rented for unlimited terms.

(8) It would be difficult to establish any industry, because the lands as a rule are rough and sterile, and water is very scarce.

BÚGIDO ZÁRATE.

POCHUTLA, July 22, 1885.

Municipality of Pluma de Hidalgo.

(1) The ordinary wage of workmen of this municipality is 25 cents per day, it being increased to 37 cents and 50 cents at the time of harvesting the coffee crop.

(2) The only contracts made are in the neighboring sierras, giving \$2 to \$3; but usually there are few contracts made, as the hands can only be found after the corn is seeded in the valleys and towns, from which cause arises the slow progress of these *fincas* (properties).

(3) Workmen are exceedingly scarce in these places, the inhabitants being satisfied with seeding a piece of land in the towns and having sufficient corn to supply the necessities of their families; from this cause result vice and misery in many families, owing to laziness and not being accustomed to work.

(4) Coffee is the principal product of this municipality, sugar-cane, tobacco, corn, frijol, cocoa, and the fruits of the torrid and temperate zones following on a smaller scale. Coffee is sold on the *fincas* at \$9 to \$10.50, in gold, the quintal (10½ pounds), the dealers exporting it to Puerto Angel to sell it in the different foreign markets. The shipments in the past have been 8,000 quintales, and an increase of 4,000 is expected this year, provided there are no calamities. Sugar-cane is cultivated by a few individuals of this place who content themselves by making *panela* (brown sugar) on a small scale, which, for home consumption, is worth 50 cents the arroba (25½ pounds). However, they are now beginning to introduce improved machinery and hope in the coming year to export unclarified sugar and *aguardiente* (brandy from cane-juice). There are no tobacco plantations, but it has been grown as an experiment, and the results proved that it could be successfully cultivated, as it was of good quality and an abundant crop. The greater part of the cocoa is raised on plantations, where it is seeded but not cultivated. As its kernel is red, we believe it would be a profitable crop to cultivate. The corn crop is not sufficient for the home consumption, it being necessary to search for it in the neighboring towns, and after great difficulties in the line of very bad roads it is found in small quantities. This article sells at \$3 to \$5 the fanega (2½ bushels). Frijol is raised on a smaller scale than corn, its value being from \$6 to \$9 fanega.

(5) The articles of consumption, which in this market are sold on Sundays, are: Meat, in strips, at 6 cents; frijol, 18 cents to 37½ cents the almud (6½ quarts); lard, 18

cents to 25 cents the pound; vervain, few, as also all classes of vegetables, which are also sold at a good price.

(6) Neat cattle, \$15 to \$30; horse stock, \$20 to \$30 for work horses, and but few sales. There are no sheep.

(7) This municipality has no private lands. All the fields of coffee and other articles are on lands belonging to the municipalities of Santa Maria Ozolotepec, Riohondo, and Poch utla, paying a rent of 6 per cent. per year on the value of the land assigned by these municipalities, which can be acquired by paying the price to the said towns.

(8) There are no factories for making soap and candles; all effects of greater value having to be imported. The sugar industry could be made to achieve magnificent results, as these lands are fertile and well adapted for raising sugar-cane, there being also beautiful streams of water which could be utilized for water-power. There are good silver and gold mines not being worked for lack of capital.

GREGORIO RUIZ.

PLUMA DE HIDALGO, July 28, 1885.

DISTRICT OF JUCHITAN.

(1) Generally the wages are 25 cents per day; but they are raised to 75 cents when hands are scarce.

(2) Contracts are made as a rule for one year, in order to settle accounts on December 31; those who work under contract are paid from \$4 to \$7 per month, and every week they are given an arroba (25½ bushels) of corn, 25 cents in silver, meat, or frijol.

(3) There is a great scarcity of hands in this district, and principally in the towns.

(4) The agricultural products are corn, frijol, rice, tobacco, sugar-cane, and indigo. Their prices are: Corn, \$3 to \$6 fanega (2½ bushels); rice, \$1 to \$1.50 arroba (25½ pounds); frijol, \$6 to \$9 fanega; tobacco, \$3 to \$6 arroba; sugar, \$3 to \$4 arroba; indigo, \$1 to \$1.50 pound. Their annual crops are difficult to calculate from the lack of data.

(5) Salt meat, \$1.75 to \$2 arroba (25½ bushels); cheese, \$9 arroba; shrimp, \$2.50 arroba.

(6) Neat cattle, \$15 to \$20; horse stock, \$14 to \$30; sheep, \$1; hogs, \$2 arroba (25½ pounds).

(7) In Juchitan there are vast tracts of uncleared land, well adapted for agriculture. They can be purchased at the rate of \$1,000 for one square league.

(8) Among the various industries which could be successfully established here is a spinning and weaving factory. Cotton could be grown in abundance; there are large tracts of land suitable for its culture, and with the markets of this State, those of a part of Vera Cruz, Chiapas, and Tabasco would assure the successful issue of the enterprise. A saw-mill would also be a profitable enterprise. Fine woods abound in this part of the Republic, and a large quantity could be exported either to other parts of the Republic or to foreign countries.

The establishment of artesian wells here and in other parts of the district would be a sure and profitable undertaking, and would be a positive benefit to the people, as the lands of Juchitan, although fertile, are generally dry, and many times the crops have failed for lack of water. Perhaps the establishment of wind-mills and common wells would be sufficient, as wells produce an abundant supply of water and winds are constant. There are other industries which might be established, and the few there are might be greatly improved, for the place is lamentably behind the times. The farmer still uses the primitive plow, and other things are on about the same scale.

FRANCISCO LEON.

JUCHITAN, July 1, 1885.

DISTRICT OF JUGUILA.

(1) In this municipality field hands earn 25 cents per day, although there are localities in the district where they are paid higher wages, as in Tututepec and the low lands around the port of Chacagua, where cotton is cultivated. When it happens to be a good crop 37 cents per day is paid.

(2) To work when they wish to, as many days as they will, and receive their pay upon leaving. The reason for this is that in this municipality no industry whatever is known, either agricultural or manufacturing. Its inhabitants are the laziest known from California to Panama. They only plant the corn which they use for food.

(3) On account of the idleness which rules this people they cannot be counted upon absolutely for any work, for the immense majority of the natives are so ignorant that they consider work a dishonor.

(4) The principal agricultural products of this municipality are reduced to one, which is corn; and it is doubtful if the two hundred families which compose the municipality produce 1,000 fanegas (2½ bushels each) annually. As for the local consump-

tion, a great part is furnished by the people of Yaitepec, who sell it in the market of Juguila at 9 cents to 12 cents for an almud, which weighs 8 pounds.

(5) The retail prices of the principal articles of consumption are: Corn, 1 cent to 1½ cents per pound; meat, 6 cents per pound; frijol, 1½ cents per pound; *panela* (brown sugar), 3 cents per pound; sugar, 18 cents per pound; coffee, 12½ cents per pound.

(6) Neat cattle, \$12; calves, from \$7 to \$20, according to age; hogs, \$1.50 to \$2; mules, \$35 to \$40; sheep, none raised.

(7) There are no private lands in this municipality. All there are are communal and in immense quantity. Their area might be estimated as, more or less, 100 square leagues, one-half of this amount being adapted to agriculture. If it is not easy to acquire said lands, it is not very difficult to purchase at a price not exceeding \$200 the square league. I purchased 4 or 5 leagues for \$700 for Mr. Lawyer Matias Romero, near Juguila, for a coffee plantation, and years ago Señor Escamilla purchased a piece with an area perhaps larger for \$60 (per league?) at a distance of 10 leagues from here.

(8) The industries which might be successfully established here are various. The cultivation of coffee on a large scale would be sufficient to pay the entire amount of importation expenses of the State. The same can be said of caoutchouc, cocoa, sugar-cane, and rice, for the cultivation of which products there are moist and irrigable lands in such abundance that around the port of Chacagua alone they can be produced to the value of \$10,000,000. Cotton, añil, and tobacco follow, of which thousands of quintals (101½ pounds each) can be produced.

Peruvian bark could be cultivated on the mountains, which here rise as high as \$8,000 feet. The ramie and other fibrous or textile plants, such as the abacá, could be produced perfectly well, the same as potatoes, frijol, and corn. We have a kind of the latter which produces the crop fifty days from the time of planting.

Attention should be particularly called to the following fact: The greater part of the lands to which reference has been made are more or less near the port of Chacagua; the greater part of them are *llanuras* (level ground), and for this reason the construction of railways or cart-roads, for the transportation of all the agricultural products of the region to the port, is very easy. It is true that lands are scarce, because the country is deserted and in a miserable condition; but as soon as a new enterprise is established, workmen come from places 50 leagues distant in search of work. This is a well-known fact, for coffee plantations have been established on the mountains entirely deserted and hands have not been lacking even for that reason. Therefore if any company among the various ones which have made contracts of colonization with the Government should decide to establish an Asiatic colony in any part of Mexico, it would be desirable that its attention should be called to the port of Chacagua, which is perhaps the best in this State and even in all the country.

I do not know whether said lands belong to communities or not, but am inclined to believe that they are private property. I know that a small part belong to several inhabitants of Tututepec, and that they bought the land for about \$7,000 or \$8,000. As the country is uninhabited—it scarcely has two inhabitants to a square kilometer, and these semi-civilized natives, but of a pacific and honest nature—the national and neighborhood highways do not merit the name. The principal road is the one from Oaxaca to Costa Chica; it is a bridle path, and in some parts of the district of Villa Alvarez it is so narrow that last year when I, being sick, had to be carried on a bed to Oaxaca, the servants who carried me had to abandon it and cross through the woods, as two men abreast could not walk in it.

If the national roads are thus, one can imagine what the neighborhood roads might be.

I will not conclude this report without calling attention to an improvement which the commercial movement started in Puerto Escondido renders necessary. On the shore which is used as a landing there is a stony place, which starting from the land extends into the sea about 20 meters. It would be easy to form on this spot a platform in the shape of a wharf, and by carrying it out 50 meters farther into the sea a wharf that would last forever could be made, and a safe anchoring ground for vessels of 300 tons burden. If the platform were carried out 100 meters, steamboats which touch at Puerto Angel could come alongside the wharf with as much security as at the Panama wharf.

As I was engaged a few years ago in commerce at this place, loading coasting vessels with the products of the country, such as hides, corn, frijol, *corozo* (a palm-tree or fruit of same), *petate* (mats made of palm), coffee, *carey* (tortoise shell), *panela* (crude sugar), &c., for Central America and the Mexican ports of the Pacific, I know the place very well.

With the wharf, Puerto Escondido would as a port be in a much better condition than Puerto Angel, as the latter is too small for large vessels to enter; while the former, being large and of good depth, would afford them good anchoring grounds. The construction of said work would not cost much, taking into consideration the great abundance of loose stone which exists in the locality. Ten ox-carts and 150 men from the prisons of Juguila, Miahuatlan, Pochutla, and Jamiltepec would finish it in four

months. The lack of said wharf causes traffic to be entirely suspended during the wet season, as it is impossible without secure anchoring grounds to risk lives and property on lighters which come to Escondido from Puerto Angel to load the coffee raised in this district.

Without roads on the land, and without facilities for sea-traffic, no industry can prosper, and the fields will remain uncultivated, the country poor and unknown, and the people in poverty. * * * In regard to the opening of cart-roads, I last year remitted to the central Government a programme in which I showed how all the roads of the State could be made cart-roads without causing any other expense than of an engineer to survey and mark out the routes, and the necessary tools.

I showed that in five years the road from Oaxaca to the port of Chacagua, 60 leagues distant, and which would cost in any other manner over \$300,000 to make it a cart-road, would, by the plan I indicated, cost only one-tenth of that amount.

I do not know whether my letter ever reached its destination or not, nor whether it has been thought best to repair any of the paths, bearing the pompous name of roads, which we cross with the risk of suffering an accident at every step.

Under such conditions it is impossible for a country to give signs of life; and although this State has figured in a worthy manner in the New Orleans Exposition, it is just to say, because it is the truth, that the greater part of the objects which went to Oaxaca from the southern coast, destined for New Orleans, were carried by hand by Indians. * * *

It is a pity that a region so extensive and so fertile should remain so uncultivated, so unknown, and almost entirely inhabited by semi-savage Indians, who, to plant an almond of corn, destroy forests of lumber worth more than \$3,000. * * * It is then indispensable, if it is desirable for us to have mercantile relations with other nations, and exchange our products with them, and to cultivate all that our lands can produce cheaply—it is indispensable, I repeat, that we commence to open roads for communication between ourselves, to become better acquainted with each other. You will recall that I once said to you that our country is to other countries as a closed book, of which we ourselves do not know even the first lines.

On this coast *panela* (brown sugar) can be produced for 1 cent a pound, a price at which it is impossible for any other country in the world to compete, and notwithstanding it is so cheap we cannot export a single pound. Why? (1) Because there are no roads except for birds and deer; (2) because there are no means of transportation; (3) because there are no ports except natural ones, or ports so called, both kinds without means for loading; and (4) because there is no vessel for carrying it. As a proof of what I have just stated, I will say that at a second trial of these fincas I now have stored 200 quintals (101½ pounds each) of coffee, which I cannot transport to the port of Escondido for lack of mules; and once there I could not load it for lack of vessels or lighters, as neither the one nor the other have any security in said port in this season.

The coming year I shall have twice or three times this crop. I leave it to you to estimate the effort it would cost to freight it by land and sea when the necessary means of locomotion is lacking.

What I say in regard to the production of *panela* (brown sugar) is applicable to the other agricultural products which can be advantageously cultivated. For example, caoutchouc only costs to produce 12 to 15 cents per pound; coarse sugar, 3 cents; tobacco, 2 cents; coffee, 3 cents; rice, 2 cents; and crude cotton, 1½ cents. These lands are abundant and astonishingly fertile, and wages very low. With improved agricultural implements, now seen only in the American catalogues, the productions would so greatly increase as to change this region of nearly naked, needy Indians to settlements of educated, free, and prosperous men. * * * It now requires months and even more to place a cargo of coffee on our deserted shores. It is not uncommon as now happens that the crop of one year is not sent to the coast until the succeeding year. Can foreign commerce increase and prosper under such circumstances? The best proof that it cannot is that it does not do it. We work year after year to get our crop sold to raise money, and plant more crops, and the continual result is that we gain nothing, and that we are more and more firmly satisfied that no country can be developed and explored on mule back or back of Indian. In this condition of things we must open roads if we do not desire to die of consumption. Without these roads we can neither produce nor export the products to pay for our foreign purchases. To pay this latter, we are now exporting what silver is left since the time that our principal wealth was in our agricultural products. When the mines fail and the silver money is all gone, what will come next? What money is still left here is loaned at 4 per cent. per month. * * * In politics this State has stood in the front rank, but this has only served to ruin her the sooner. What material progress has been gained by the sacrifice of her sons? I can see none. Oaxaca has a population of 800,000, and has not schools for the half. She has a coast line of nearly 150 leagues, with various ports, roadsteads, coves, landing places, and not even a coasting vessel. There are valleys densely populated, and with natural cart-roads from Huixtla to Miahuatlan,

some 40 leagues, and from Tlacolula to Ayoguesco some 20 leagues; and yet you will be astonished to know that there is not one kilometer of stage line. * * * So that a State which a hundred years since received *conductas*, bringing \$4,000,000 to pay for her grain crop, is now reduced to the lowest stage of poverty; and not only does not now receive a dollar, but sends out the little money now in circulation, thus deepening the poverty of a people worthy of a better fortune. It is not necessary that there should be much money to begin or carry on the work of making cart-roads. To open a road from Oaxaca to the port of Chacagua an engineer should be sent to survey, locate, and apportion the work to each *jefe político* along the route. The latter can then divide this work among the proprietors, and have the work done a vara a year until finished. At the end of five years the state would have a good road without more expense than paying the engineer and for the tools used in the work. * * *

HILARIO CUEVAS.

CAFETAL GUERRERO, July 4, 1885.

STATE OF PUEBLA.

DISTRICT OF HUEXOTZINGO.

(1) Ordinarily, 25 cents a day. In gathering wheat and last hoeing of corn the price is 31 to 44 cents, especially if the wheat be a good crop and command a high price.

(2) Contracts are by the year and by the day. The first have to work every work-day in the year from 6 a. m. to 6 p. m. when they do not have tasks, which latter is preferred. In some haciendas a certain quantity of corn is furnished on account each week; sometimes at a fixed price of \$4 to \$5 per carga (5 bushels). In the haciendas the workmen receive advances which are liquidated in the weekly or annual account. August is the end of the year, when debts are settled and new contracts made. The hacienda gives each workman a cartilla showing his debt as it appears on the books.

(3) There are usually sufficient hands; and the only scarcity is when all the wheat matures at once and at the same time with the last hoeing of the corn. Most of the laborers have small pieces of corn, and this causes for the time a slight scarcity of laborers and higher prices. The class of laborers is better than in many other districts; only the vicious have no property; and all have some of the comforts of life.

(4) Annual products: Wheat, 58,000 to 60,000 cargas (5 bushels each); corn, 30,000 to 35,000 cargas; frijol, 3,000 to 4,000 cargas; barley, 3,000 to 4,000 cargas; chile (*mulato*), 37,000 to 38,000 arrobas (25½ pounds each). Wheat is worth \$7 to \$10 carga of 14 arrobas; corn, \$4 to \$5 carga; chile, \$3 to \$4 arroba; frijol, \$5 to \$10; barley, \$2 to \$4. Garlic is produced in considerable quantities, and some is sold for export. Of fruits many varieties are produced, but none on a large scale, such as pears, parones, apples, peaches, quinces, mulberries, tunas, nuts, lemons, sour oranges, *chabacanos* (a Mexican apricot), *ciruela de España* (dwarf plum), *capulin* (resembles a cherry), *guinda* (a sort of cherry), *tejocote* (resembles a small peach), &c. There is a long list of woods, none of which are exported.

(5) Meat from 10 cents to 19 cents per pound; corn, \$4 to \$6 carga (5 bushels); and in scarce years to \$7.

(6) Work cattle, when native or acclimated, \$20 to \$30; from the hot lands, \$15 to \$20; mules, \$25 to \$40; horses, \$15 to \$20; sheep, \$2.50 to \$3.50 for males, and \$1.50 to \$2 for ewes. Hogs have no fixed price, but are held when fat at \$1.50 to \$2 the arroba (25½ pounds).

(7) There are opportunities for acquiring lands; those not irrigated are held at \$1,500 per caballeria (107½ acres English); irrigated lands vary greatly in price, from \$3,000 (caballeria) to 2 cents the square vara.

(8) Industries of linen, paper, wines, pisciculture, and woods.

There now exist here only flouring mills, fabricies of *aguardiente*, of cotton, oil, and bread, and the fabrics of cotton and wool are generally made by hand with yarn, thread, bought in Puebla. For a long time I have desired to denounce the prevalent custom of cutting timber (and making lumber) with the ax. I think it highly important that this should be prohibited. In Europe, as in the United States, this is not done; only the saw is generally used. By using the saw the older trees would be taken and the younger ones left to grow. * * * The general preference here is for timber worked with the ax, but if this were generally prohibited a great change would be made, and the forests, which are so important, preserved from such reckless destruction.

FRANCISCO FERNANDEZ IBARRA.

PUEBLA, June 18, 1885.

DISTRICT OF TETELA.

(1) Twenty-five cents to 37 cents per day here. In other municipalities, up to 50 cents.

(2) Contracts are made for the day, as workmen are paid either by the day or by the week, receiving their wages, when it suits them, in grain, at the market price.

(3) In this municipality there are sufficient field hands, although they are scarce in some of the others of this district, especially in those of the torrid zone, where the agricultural branch is of most importance.

(4) The principal agricultural products of the municipality are corn, barley, frijol, *kaba* (bean), *arvejon* (chickling vetch), and wheat on a small scale. In the municipalities of the torrid zone they are corn, coffee, rice, tobacco, *chilpoile* (a pepper), vanilla, sugar-cane, frijol, and cotton.

It is very difficult to give the exact data in regard to the different branches of agriculture, and they are only given approximately and for the municipality, as follows:

Products.	Annual consumption.	Annual product.	Annual imports.	Annual exports.
	<i>Cargas.</i>	<i>Cargas.</i>	<i>Cargas.</i>	<i>Cargas.</i>
Corn	30,000	18,000	12,000	.....
Barley	10,000	7,000	4,000	.....
Frijol	1,000	800	400	.....
Arvejon (chickling vetch)	4,000	4,500	.....	1,000
Kaba (a bean)	350	350	.....	.....
Wheat .....	.....	250	.....	250
Potatoes	200	250	.....	100
Lentils	35	60	.....	20
Totals	45,585	31,010	16,400	1,370

(5) Retail prices: Corn, \$4.50 to \$6 a carga (5 bushels); frijol, \$7.50 to \$12 a carga; barley, \$2 to \$3.50 a carga; *arvejon* (chickling vetch), \$4.50 to \$6 carga; *kaba* (a bean), \$4.50 to \$6 carga; potatoes, \$7 to \$14; coffee, \$5 to \$12 the quintal (101½ pounds); *chilpoile* (name given to one of the best kind of chile, or pepper), \$12 to \$24 the quintal; rice, \$8 to \$12 the quintal; wheat, \$4.50 to \$9 carga; beef, \$2 to \$2.50 the arroba (25½ pounds); pork, \$1.50 to \$2 the arroba; mutton, \$2.50 to \$3 the arroba.

(6) The price of neat cattle, although there are none raised, is from \$15 to \$50, according to their condition; there are enough brought in from different places for work. There are no horses raised, and their value is from \$25 to \$100 according to class. A few sheep and hogs are raised, and the value of the first is from 75 cents to \$5, and of the hogs, unfattened, \$1 to \$5; fattened, \$8 to \$30, according to class.

(7) In this district the real estate is in small tracts, as each inhabitant owns a small piece of land which he cultivates; but it would be easy to purchase sufficient land to establish any agricultural enterprise or colony. No sales have been made recently; but the common price of land is from \$240 to \$360 *carga de sembradura de maiz* (land on which to sow five bushels shelled corn).

(8) The industries which could be established with good results are: The cultivation of mulberry trees and the silk-worm, of vegetable silk or ramio, grapes, olives, which have been tried with good results, but have not been established for lack of capital. In the municipalities of the torrid zone the agricultural industries and crops, with the exception of corn, are also on a very small scale for lack of capital and hands, as cocos, indigo, vanilla, figs, achotillo, &c., which are raised on hot lands, could all be established on a grand scale with very good results.

ISIDRO GRIMALDO.

TETELA DE OCAMPO, June 27, 1885.

DISTRICT OF PUEBLA.

(1) Workmen earn from 12 cents to 25 cents, according to age; cartmen, 31 cents.

(2) In Holy Week workmen contract to work for one year, nominally, but for the past eight or ten years no assistance has been given from the authorities in making them fulfill their agreements, and this has caused absolute demoralization among the workmen, and, as a necessary consequence, serious difficulties for the agriculturists.

(3) Field hands are rather scarce, particularly in the months of May and June, when during seed time and at harvest time more hands are usually needed. To these hands they pay 31 cents to 37 cents for a *tarea* (task), which consists in planting 1,500 to

1,800 plants (or seeds), and 2,270 square meters of mowing, reaping, binding, carrying, and stacking.

(4) Wheat, corn, alfalfa, and a little frijol. The annual crops and average prices are: Wheat, 7,000 to 9,000 cargas (14 arrobas or 370 pounds each), at \$7.50 to \$8; corn, 12,000 to 15,000 cargas (47 almudes or 312 quarts each), \$3 to \$3.50; a large part of which is sold in *elote* (green corn) at 40 cents to 62 cents a sack. Alfalfa (lucerne), in the months from November to February, produces for sale 3,500 to 4,000 quintals (101½ pounds each) per day, at 12 cents to 25 cents. The remainder of the year three times as much is produced daily, at 6 cents to 12 cents quintal. At present white wheat sells at \$9 to \$9.50 carga; corn, \$5 to \$5.50, both these crops being somewhat scarce, though the other crops have been about as usual.

(5) Beef, 15 cents; mutton, 12 cents.

(6) Neat cattle, \$16 to \$20; sheep, \$3 to \$3.25; hogs, \$2 to \$2.12 arroba (25½ pounds).

(7) Generally there are none for sale. Their value in this district is \$1.50 to \$2 for 100 square meters.

(8) No answer given.

J. COLOMBREO.

HACIENDA DE MANZANILLA IN PUEBLA, September 26, 1885.

STATE OF QUERÉTARO.

Hacienda of Juriquilla.

(1) *Peones* (laborers), 19 cents; *mayordomos* (stewards' assistants), 25 to 50 cents per day and a ration of from one-fourth to one-half a fanega (21½ bushels) of corn per week.

(2) No contracts for labor are made between laborers and proprietors, but nearly all crops are made on shares. Share-workers are *medieros* and *quinteros*. *Medieros* receive from the hacienda land, seed, and half the expense of harvesting, and get half the product. *Quinteros* receive teams, tools, seed, and three-fourths of the expense of the harvest, and get one-fifth of the product. Lands are only rented at \$12 for sufficient land on which to sow a fanega (2½ bushels) of shelled corn.

(3) There is no scarcity of hands, and at present an overplus on account of the failure of the corn crop.

(4) The principal products are wheat, corn, frijol, barley, and chile, and the quantities cannot be fixed without grave error. The lowest prices are: Wheat, \$6 carga of say 371 pounds; corn, \$2 carga of 96 quarterones (say 154 quarts); barley, \$1.50 for same size carga; and chile at \$3.

(5) Retail prices: Corn and wheat, \$3 to \$4 carga (of 154 quarters); beef (little eaten), 9½ cents pound; pork (more used), 12½ to 15½ cents pound; veal, 12½ to 15½ cents pound.

(6) Neat cattle, cow or bull, grown, \$15; work oxen, \$20; mares, with foal, \$6 to \$7; wild horses, \$15; ewes, \$1.25 to \$1.50; wethers, \$2.50 and \$3 when fat.

(7) There is no opportunity to acquire public lands; but the few sales made in late years have been at higher prices, as the prices of haciendas have gone up since bank bills have begun to circulate as money.

(8) I cannot speak certainly, but think that well-informed parties with sufficient capital might establish some with good results.

B. LOYOLA.

JURIQUILLA, June 19, 1885.

STATE OF SAN LUIS POTOSÍ.

DISTRICT OF SAN LUIS POTOSÍ.

Municipality of San Luis Potosí.

(1) Those who work by the day receive 18½ cents to 25 cents daily; and those who work by the month receive the minimum price of \$3 with a weekly ration of two almudes (6½ quarts each) of corn; this price varies, and increases according to the work performed.

(2) Daily or monthly, and prices paid at the close of the day's or month's work.

(3) There are sufficient.

(4) Corn, frijol, *chile* (pepper), barley, wheat, and other products on a smaller scale.

It is not easy to estimate the annual crops, especially now, when for the past two years a great drought has been suffered.

Below are given the present prices at which these products are quoted: Corn, \$5 to \$5.25 fanega (2½ bushels); frijol, \$7 fanega; *chile seco* (dried pepper), \$5 arroba (25 pounds); barley, \$2.50 to \$3 fanega.

(5) The retail prices in this market are: Beef, \$1 arroba (25½ pounds); mutton, \$2 arroba; pork, \$3 arroba; corn, \$5 fanega (2½ bushels); frijol, \$7 fanega; chile, \$5 arroba.

(6) Neat cattle, \$18 to \$30; horse stock, \$10 upwards; sheep and goats, \$2 to \$3; fat hogs, according to weight.

(7) It is difficult to acquire private land in this municipality; those sold are worth \$150 to \$200 the *fanega de sembradura* (more or less 9 acres) without water for irrigating, this being very scarce in the valley.

(8) At present no industry could be successfully established, owing to the prostration in all the branches of public wealth.

SAN LUIS POTOSÍ, August 10, 1885.

STATE OF TABASCO.

DISTRICT OF COMALCALCO.

Hacienda of San Cayetano.

(1) Workmen earn 50 cents per day in summer and 37½ cents in winter with food; servants get \$6 a month with food; *vaqueros* (cowherds), who furnish a horse, saddled and bridled, earn \$1 per day; *tabradores de caoba* (mahogany-cutters), with a daily *taña* (task) of 7 square varas of surface, earn \$12 per month and food.

(2) The contracts with day laborers are generally made for one week only; they are nearly always paid the same day that they work, as they are not obliged to work the seven days consecutively. Contracts with servants are for one year, and are made in the following manner: On the arrival of the servant, he delivers the letter containing his account with his previous master; a debt which may amount to \$100, \$150, \$200, or more, which the new master pays. Married men are preferred to bachelors for servants. The servants perform all kinds of work except sugar-making and cutting mahogany for \$6 per month, the master promising to give them maintenance, which consists of 100 ears of corn, four pounds of meat, two of frijol, one of rice, one of lime, and one of salt per week for the married servants. Besides food the master furnishes the cabin, *metate* (a flat stone used for mashing the softened corn for tortillas or the cocoa for chocolate), *banco de moler* (pounding-bench), which is a plank 2½ varas long, 27 inches wide, and 4 inches thick, a cutlass, ax, and *coa* (knife). Those who work in the fields of sugar-cane or in the sugar-mills earn \$8 per month; their work commences at 1 a. m. and suspends at 3 p. m. The ration is the same as that of the other servants. The hours of work for the others in summer are from 6 a. m. to 10 a. m., and from 12 noon to 3 p. m., when sufficient time is given them to take a drink, to which they are accustomed, called *pozole*; then they continue their work until 5 p. m. In winter they do not have their afternoon resting spell, but quit work earlier.

The *mozos de ganado* (stock-herders), if married, earn \$6 per month; if unmarried, \$4, with the same ration as the other servants. The master furnishes the cowherd with a horse, saddled and bridled, and the necessary harness.

(3) Hands are scarce, for although there are towns of natives who when called upon will work for 50 cents per day and their food, yet they will only contract to work for one, or, at the most, two weeks.

(4) The principal agricultural products are cocoa, coffee, corn, frijol, and sugar-cane. It is difficult to estimate the annual crops. The average selling prices are as follows: Cocoa, \$15 the carga of 60 pounds; coffee, \$9 the quintal (101½ pounds); corn, \$2.50 the zontle—equivalent to 400 ears of corn, or 5 arrobas (25½ pounds each) of shelled corn; frijol, 50 cents the arroba.

(5) As there is no market, nothing is sold at retail excepting meat and sugar. Meat sells at 6½ cents for 14 ounces; sugar, better class, 6½ cents per pound; a poorer quality at 6½ cents for 1½ pounds. Sugar at wholesale sells at \$1 arroba (25½ pounds) for first class, and 75 cents arroba for the second. The prices last year were \$2 for the first class and \$1.50 for the second. Lard sells at 50 cents per bottle of 1½ pounds; salt at 37½ cents the arroba; lime at 12½ cents the arroba.

(6) Neat cattle, \$18 to \$30; work horses, \$25; second class, \$30 to \$100, and first class, \$100 to \$200. No sheep raised.

(7) It is difficult to acquire private lands. *La caballería de tierra de labor* (probably about 107½ acres, English) sells at \$200 to \$300; for pasture on lowlands, \$100. There are still national or public lands.

(8) Extensive *ostionales* (oyster beds) await the impulse of industry to enrich this region. Manufacturers of lime form a bed of wood on which oysters accumulate; when the mollusks are dry, they are set on fire to utilize the shell, which is converted into lime. On account of the abundance of oysters this waste is not felt, so canning oysters would be a lucrative industry, which has not yet been developed.

The fisheries are completely abandoned in spite of this being a marine industry equaling in importance agriculture on the land.

Factories for making hats and shoes would produce good results, as there are none of either kind in the entire State.

In fine, almost any industry could be advantageously established, as may be inferred from the data herein given.

PEDRO MENDEZ.

SAN CAYETANO, *Tabasco*, July 3, 1885.

DISTRICT OF BALANCAN.

Department of Frontera (the frontier).

(1) Free field hands receive from 62½ to 75 cents per day, without food, and servants who work by the month get \$8 and food, or \$12 without.

(2) Contracts are made for one year, and subject to the conditions of the civil code of the State, to give time enough to harvest the crops.

(3) Field hands are scarce, as many have left this State to work in Chiapas and the Republic of Guatemala in cutting mahogany. The marine service also occupies many men. Intelligent colonists are needed to till the land, and machinery to obviate the necessity of employing so many men.

(4) The principal products of this municipality are the following: Corn, three crops a year; the black frijol of superior quality; sugar-cane and tropical fruits. Cocoa, coffee, rice, cotton, vanilla, tobacco, and different kinds of plants grow in a wild state, but are not cultivated for lack of hands and capitalists. The principal woods for exportation are mahogany, cedar, logwood, and a great variety of construction woods abound in the forests, which have not been exploited (*explotado*).

(5) Beef, 12½ cents pound; pork, 18 cents; corn, \$4 carga (125 pounds), equivalent to one zontle of 400 ears unshelled; however, its normal price is \$2 zontle. The rise in price is occasioned by the devastations made by the locusts, which at present destroy the crops. Lard sells at \$7 arroba (25½ pounds); rice, \$1 arroba; frijol (black), 75 cents arroba, and coffee; \$9 the quintal (101½ pounds).

(6) Neat cattle, \$20; horse stock, \$25.

(7) There is but little vacant land (*terrenos baldíos*) in this municipality, and its price is that designated by the department of public works (Mexico). Private lands are sold at \$80 to \$150 caballería (of 10 zontles of 50 hectares, equal to 12 fanegas; from 108 to 150 acres, English).

(8) The following industries could be established here: Fisheries, furniture and dye-woods, ixtle fiber and other filaments, mats and other textures made from the palms, tile kilns, tobacco manufactories, the exportation of fruit, extracting of dye-woods, the exportation of caoutchouc, tanneries, &c.

J. C. DIAZ.

FRONTERA, July 11, 1885.

Department of Jonuta.

(1) Monthly wages are \$10 to \$12; on a few fincas \$15, and on others much less, when it is stipulated that the master has to give to the servant a weekly ration of provisions, worth \$4 or \$5 a month. Those who work by the day generally receive 37½ cents; on an occasional finca, 50 cents. In working at fine woods the contracts are so much for the quintal or ton; but it amounts to the same as the daily wages.

(2) Field hands are under a sort of bondage, constituted by a debt of \$300, \$400, \$500, or even more, which each servant owes, and, by the law which governs these contracts and permits the forced confinement of the servant, he who for just cause wishes to change master shall have three days' time for each \$100 he owes given him to find one who will pay his indebtedness.

(3) The hands being monopolized by the large proprietors, who are occupied in the getting out (*explotación*) of logwood, mahogany, and cedar, there are scarcely any for agricultural purposes.

(4) Corn, rice, frijol, *panela* (brown sugar), sugar, *aguardiente* (brandy), onions, garlic, and several other bulbous plants which are used for food, but all in such small

quantities that they are insufficient for the necessities of the region. On account of the devastation of the crops caused by the locust for the past five years the prices of all agricultural products have risen to triple the price they had before. The corn sells at \$4 or \$5 the zontle (400 ears); frijol, during the harvest in other localities from which it is brought, 75 cents to \$1 arroba (25½ pounds); later it rises to \$1.50, \$1.75, and \$2.25; *panela* (brown sugar), \$1 to \$1.12½ arroba; sugar, \$1.50 to \$2.50 arroba; *aguardiente* (brandy), \$7 to \$8 barrel.

(5) Meat without bone, 10 ounces for 6½ cents; with bone, 6½ cents a pound; corn now sells 10 or 12 ears for 12½ cents; frijol, 12 or 16 ounces for 6½ cents; sugar, 12½ cents a pound; *panela* (brown sugar), 6½ cents a pound; *aguardiente*, 12½ per bottle.

(6) Neat cattle, \$10 in lots, and \$14 to \$18 when sold in small lots; horse stock, \$12 to \$30. Sheep are not raised, and since the articles of prime necessity have become so scarce, hogs have not been raised to any extent.

(7) There are no sales of private property, because it is all in the hands of a few rich property-holders, who own vast tracts of land, from which they have driven the small agriculturists, who from ignorance failed to obtain ownership for their small possessions. The present owners are engaged in getting out logwood, mahogany, and cedar.

(8) With hands and capital many lucrative industries could be established. These lands, well watered by the Usumacinta, the San Pedro, the San Pedrito, San Antonio, Rio Chico, and a multitude of arroyos, give three crops of corn a year, two of frijol, and two of rice; sugar-cane is perpetual; very good cocoa, excellent coffee, bananas of different kinds, very nutritious, and from some of the varieties a superior vinegar is produced; the land is well adapted to the culture of caoutchouc, and in fact to all the products of hot lands.

Brick and tile making and some branches of pottery flourished here in other times.

Stock-raising could be successfully carried on, as there is an abundance of excellent pasture ground.

Although a superior quality of cheese and butter is produced, the rancheros scarcely make enough for their own consumption.

In the forests, oaks, *sapote-bobo* (sapota tree), and other trees the fruits of which are excellent food for hogs, grow spontaneously.

Plants containing tannin also abound; game affords many different kinds of skins; yet there is no tannery, and these products are lost.

The rivers, arroyos, and lagunas abound in rich fish of various kinds. In certain seasons of the year fishing and salting the *robalo* (a fish like bream) could be done profitably; also the *sdbalo* (shad), for its delicious egg, which in flavor equals that of the *lisa* (liza-skate), the preparation of which constitutes one branch of industry on the coasts of Campeche and Yucatan. Even the ferocious alligator, which abounds in prodigious numbers, could be utilized in some industry, for good sole-leather can be made of its skin, and it would also be easy to make some use of its fat.

In fine, the fertility of the soil and the facility of communication by a multitude of water-ways, invite mankind to work.

Notwithstanding all these conditions, agriculture is nil, industry and the arts unknown.

The population, instead of increasing, as is to be expected in a fertile country, has decreased, partly on account of having been driven from their own possessions and partly because of civil war, which has caused so much damage to this region.

JOSE DEL C. RODRIGUEZ.

JONUTA, July, 1885.

STATE OF TAMAULIPAS.

(1) Twelve and a half cents, 19 cents, and 25 cents per day with a varying ration of corn, frijol, and salt. Per month, \$3 to \$6, with ration and room for house. Work is also done by *tareas* (tasks).

(2) In some cases written contracts are made, but generally they are verbal. The proprietor agrees to give the daily or monthly wage and aid in furnishing materials for a cabin. In rare cases the laborer has a small garden. He often has a horse or mule, occasionally a yoke of oxen, and almost always a few pigs and fowls. He usually owes his master, and, as he cannot read, carries a slip of paper or stick of wood on which a zero serves for dollars and straight lines for reals (12½ cents). A shorter line sometimes represents a medio (6½ cents) or a cuartilla (3½ cents). When he buys any article from the master or receives any money, the amount is marked on his paper or stick. As agriculture is on a very limited scale in this State, many ranchers have small holdings and do the greater share of the work. Those who under no special agreement have been allowed to build on the ranch or to move into

houses already there may be hired by day or task in busy seasons. Farm laborers in this State are no better off than in the other States of Mexico.

(3) There are usually enough and more than enough for the small amount in crops.

(4) The principal product is corn, of which some 79,383,600 kilos, valued at \$1,677,120, were raised in 1883. Sugar-cane and its product (mostly a crude sugar called piloncillo), \$300,000; vanilla, \$270,800; cotton, \$168,000; frijol, \$143,970; sarsaparilla, \$94,140; rice, \$94,000; wheat, \$82,000; peppers, \$72,480; potatoes, \$25,000, and barley, \$13,400, are the other important articles. Oranges and many classes of temperate, semi-tropical, and tropical fruits are grown in the southern part of the State, and this industry could be greatly increased with good methods and markets.

(5) District of the North, municipality of Nuevo Laredo: Corn from United States, \$9 carga (of say 312 pounds to 336 pounds). In Laredo, Tex., \$8. Flour from United States, \$12 carga; coffee (Mexican and from United States), 12 cents to 18 cents pound; white sugar from United States, 8½ cents pound; lard, also from United States, \$3.50 arroba (25½ pounds); salt, also from United States, 4 cents pound; rice, 7 cents pound; soap, 8½ cents pound; coal oil, 35 cents gallon; frijol, Mexican, \$1 almud (6½ quarts); piloncillo, \$18 carga.

Municipality of Mendez.

Corn, \$5 fanega (2½ bushels); frijol, \$12 carga; peas (chickpeas), \$6 fanega; piloncillo, \$20 carga (304½ pounds); wool, \$1 arroba (25½ pounds); horse hair, \$3 arroba.

FOURTH (TULA) DISTRICT.

Municipality of Antiquo Morelos.

Frijol, \$6 fanega (2½ bushels); peas (chickpeas), \$4.50 fanega; piloncillo, \$20 carga (304 pounds); rice, \$6 quintal (101½ pounds); coffee, \$9 quintal; tobacco, \$15 quintal.

(6) Tula.—Neat cattle and horse stock, \$9 to \$12; sheep and goats, \$1 to \$1.25.

Municipality of Tula.

Prices are high because of several bad years: Corn, from 75 cents to \$1 fanega (2½ bushels), in good years to \$9, present price \$2.50; frijol, \$3 to \$12 fanega, present price \$5; potatoes, \$2.50 to \$6 fanega.

MAY 20, 1885.

DISTRICT OF THE SOUTH (TAMPICO).

Municipality of Magiscatzin.

Annual product: Neat cattle, 1,900 head; horse stock, 1,400. Annual export: Neat cattle, 633 head at \$14 each, \$8,862; horse stock, 466 head at \$12 each, \$5,592.

(7) It is difficult to obtain good titles to lands anywhere in the State. Some large tracts are for sale at \$500 to \$1,000 per square league (4,338 acres English). Good lands, valley lands, which are flooded in high water, or where ditches for irrigation can be built, are sold in small lots at greatly varying prices.

In the valley of the Rio Grande (in this State) no irrigation of any account is attempted, but the uncertain rains are depended upon. If a crop dries up a new one is put in without much regard to the time of year.

In the southern portion of the State only the valleys which can be irrigated are much used, and the product, while small, is more regular.

(8) This State is perhaps the best in the world for horse stock and neat cattle. Land is cheap, labor cheap, and stock can be purchased at low rates. Nowhere else are the climate and grass more favorable, and no stock in the world are more hardy and prolific. Water is often scarce, but in large tracts of land they can be easily moved from point to point as necessary. It is near to Texas, a steady market for horses and cattle. By the United States tariff laws all breeding animals may be imported free of duty. This lets in mares, stallions, cows, and bulls. A single invoice presented to me [Consul-General Sutton, of Matamoros] has been for free entry of 15,000 head of cows, heifers, and bulls. If large tracts were purchased by companies having sufficient capital the present grade of animals could be easily raised in one or two crosses to a fine class of stock. For a fuller discussion of this subject reference is made to my report on beef cattle, published in No. 31 of United States Consular Reports for July, 1883, and my report on breeding cattle, sent with my No. 106 of December 31, 1883. Another important enterprise would be the sinking of artesian wells. If they could be successfully put down, and a good supply of water obtained, the resources of this State would be immensely increased. By more careful ditching the present

water supply could be better utilized, and by building dams and tanks this supply could be greatly increased. The gathering and export of ixtle and other fibers, and the introduction of improved methods of extracting these fibers (see my report on Fiber Plants of Mexico, published in No. 42 of the United States Consular Reports for June, 1884); the erection of saw-mills to utilize the considerable timber forests in the southern part of the State, both for local use and for export; the putting in of better machinery for treating sugar-cane, are all measures of great importance to the State.

This State is almost unknown; is off the usual routes of travel, and hence has received but little attention. Omitting mention of possible mineral wealth, this State has more good grazing land and promises better returns to careful investors than any other border State.

STATE OF TLASCALA.

DISTRICT OF CALPULALPAM (WHOLE).

Municipality of Calpulalpam.

- (1) Thirty-one cents to 37 cents per day.
- (2) Contracts are made in two ways: in the first the workman promises to work one year in consideration of an advance of money which he asks from the proprietor; and the second, receiving weekly the entire amount of his wages.
- (3) There are not sufficient hands for the agricultural labors of this municipality.
- (4) The principal agricultural products of this municipality are corn, wheat, *arveja* (chickling vetch), *haba* (a bean), and barley. The prices per carga (5 bushels) at which these articles sell are as follows: Corn, \$5; wheat, \$3; *arveja*, \$4; *haba*, \$3.50; and barley, \$2.50.
- It is difficult to estimate the annual crops of these articles.
- (5) The retail prices of the principal articles of consumption are: Beef, \$2 the arroba (25½ pounds); mutton, \$3 the arroba; pork, \$3 the arroba; corn, \$6 the carga (5 bushels); frijol, \$12; *arveja*, \$6; and *haba*, \$4.50.
- (6) Neat cattle, \$25; horse stock, \$10 to \$15; sheep, \$2.50; and hogs, \$2 the arroba.
- (7) There is no opportunity for acquiring private lands.
- (8) Factories for spinning, making glass, brandy, paper, and gas could be established.

MIGUEL DE LEON.

CALPULALPAM, June 27, 1885.

Municipality of Hueyotlipam.

- (1) Twenty-five to 37 cents per day.
- (2) The proprietor agrees to furnish the laborer with water, house, and all he may justly need, whether it be in effects or money, as well as to supply him with food even when he may be unable to work, for some lawful reason. The workman on his part agrees to work throughout the entire working year, which is counted from one Holy Week to the next, with the exception of the *días feriados* (feast days), and having the privilege to ask for quantities in advance to be paid in his labor.
- (3) The hands are insufficient, for which cause workmen outside of the municipality are employed, causing high prices. This occurs every year, for which reason labor here is not very productive.
- (4) The principal products are corn and barley. Wheat, *haba* (a bean), *arveja* (chickling vetch), frijol, and *pulque* (a drink) are all on a small scale. The average prices are: Corn, \$3; barley, \$1.75; *pulque*, \$3 the carga; and wheat, \$6 to \$7 a carga. The other articles are in small demand.
- (5) There is no market here to determine the retail prices.
- (6) Neat cattle and horse stock are not for sale here, but on the contrary the owners of *fincas* purchase those necessary for their work; sheep are sold on a very small scale, \$1.75 to \$2.50. Hogs are not raised as a business, but as a means of utilizing the damaged grain or that for which there is no demand.
- (7) Lands are scarce and generally poor; consequently there are no opportunities for purchasing them.
- (8) None; the population is small and all are occupied in cultivating the fields.

CARLOS MARIA IZQUIERDO.

HUEYOTLIPAM, June 22, 1885.

STATE OF VERA CRUZ.

CANTON OF HUATUSCO (WHOLE).

Municipality of Azocuapam.

- (1) The wage of field hands is \$9 per month from January to June, and \$6 from June to December.
- (2) The conditions under which contracts are made are all special and verbal.
- (3) During the months from January to June hands are scarce, but from July to December they are abundant.
- (4) The principal agricultural products are corn, the annual crop being 1,500 cargas (5 bushels), at \$5; coffee, 1,000 quintals (101½ pounds), at \$7.25; and sugar-cane, 3,000 to 4,000 cargas, at \$5 each.
- (5) The retail prices of corn and meat for this year are, the first at 50 cents cuartilla and the second, although not always for sale, at \$2.50 the arroba (25½ pounds).
- (6) Neat cattle, \$18 to \$20; horses, sheep, and hogs are not raised.
- (7) It is difficult to acquire private lands in large amounts, as the greater part of the lands are owned in small lots; the sales which have been made were at \$1 per hectare (say 2½ acres English).
- (8) The situation of the land in this municipality affords no conveniences for establishing any industry whatever.

FERNANDO MORENO.

AXOCUAPAM, June 30, 1865.

Municipality of Tenampa.

- (1) Thirty-seven cents per day.
- (2) Contracts are special.
- (3) There are sufficient hands.
- (4) The principal agricultural products are: Coffee, which crop for 1884 was 451 quintals (101½ pounds each), which was sold at \$8 the quintal; corn, 300 to 400 cargas (5 bushels), of which quantity 100 are sold, at \$3 to \$5 the carga, and the remainder is used for home consumption; frijol, which is cultivated on a small scale, about 50 cargas being the annual crop, selling at \$1 to \$1.50 the cuartilla.
- (5) Articles of consumption are: Corn, \$4 to \$5 the carga; frijol, \$1 to \$1.50 the cuartilla; no meat is sold in this municipality.
- (6) Neat cattle, \$1½ to \$20; sheep and hogs are not raised.
- (7) There are no opportunities for acquiring private lands.
- (8) No industries could be established for lack of elements.

JUAN B. MORALES.

TENAMPA, July 6, 1885.

Municipality of Tlacotepec.

- (1) Twenty-five to 37 cents per day.
- (2) In this locality it is not customary to make any other contract than to stipulate the wages which each one is to earn, according to the class of work he performs, which wages are paid every Saturday.
- (3) Usually there is a scarcity of field hands, and only from October to March there is a sufficient number to gather the coffee crop.
- (4) The principal agricultural product of this municipality is coffee, of which, according to official data, the crop in 1883 was 7,668 quintals (101½ pounds each); that of 1884, 5,892; and the present year, to date, 5,162 quintals have been exported, it having been sold in the three years at \$6, \$7, and \$8 the quintal. Corn, frijol, and rice are also cultivated, but in such small quantities that they are not sufficient for the home consumption.
- (5) The retail prices of the articles of prime necessity are as follows, with a few variations: Fresh meat at \$2 the arroba (25½ pounds); corn, \$4 the carga (5 bushels); frijol, \$8 the carga; rice \$1.50 the arroba (25½ pounds); salt, 75 cents to \$1 the arroba.
- (6) It is impossible to fix the price of stock, as there are no stock farms in this locality and no large lots of any kind of stock. All that is brought here for consumption or use or is found here varies greatly in value according to time and circumstances.
- (7) The few lands belonging to this place are not sufficient even for the necessities of its inhabitants; consequently there are no sales save occasionally in very small portions.

(8) A few industries might be established on a small scale, as there are none to mention; but there would be great difficulties to be encountered if they were established on a large scale, for lack of hands, roads, and motive powers for those industries which would require them.

PABLO JÁCOME.

TLACOTEPEC July 18, 1885.

Municipality of Xochiapam.

(1) Thirty-one cents to 37 cents per day.

(2) Usually for clearing and underbrushing a *tarea* (task) a payment of 37½ cents is made. For preparing the ground after it is cleared and underbrushed for corn or frijol, 37½ cents. For planting a *tarea* after it is cleared and the ground prepared, 12½ cents for corn and 18 cents for frijol. To prepare the ground for planting coffee, for digging 160 holes, one vara in depth and a third of a vara square, 37 cents, and for planting the coffee, 37 cents per day.

(3) Field hands are scarce. The majority of the owners of fincas of coffee, sugar-cane, and other crops, employ gangs of workmen, who come from San Miguel Guaxcaleca, State of Puebla, consisting of 4 to 8 individuals.

(4) Coffee, corn, frijol, and sugar-cane. The latter two not in abundance. A *cuartilla* (.83 quart) of seed corn usually seeds 24 *tareas* (tasks) of land of 900 square varas, and produces annually, under favorable circumstances, one fanega (2½ bushels) a *tarea*, and it usually sells at the rate of \$4 the carga (5 bushels). A *cuartilla* of frijol for seeding seeds four *tareas* of land and produces one fanega (2½ bushels), which sells generally at \$12 a carga (5 bushels), requiring six months to raise the crop. A finca of coffee of 1,000 plants occupies 10 *tareas* (tasks) of land, and produces on an average, 8 quintals (101½ pounds each) and generally sells at \$7 and \$8 the quintal. A finca of sugar-cane of four *tareas* (tasks) of first-class land produces 8 cargas of 10 arrobas (say 255 pounds) of piloncilla, and it generally sells at \$5 the carga.

(5) The retail price of beef without bone 9 cents; same with bone, 7 cents.

(6) There is no demand here for stock of any kind. Beeves are brought from *tierra caliente* (hot land), where they are bought at \$15 to \$20. When sales of horse stock are made the price is from \$12 to \$14.

(7) There are no opportunities for acquiring private lands here. When sales have been made they have been on a very small scale, not to exceed 25 or 30 *tareas* (tasks). For seeding or planting, fincas and *solares* (lots) in the center of the town, composed of a *tarea* and a half of land, the sales which have been made recently are: For one *tarea* of uncleared land \$1; lands for seeding at 50 cents a *tarea*; solares in the center of the town at \$25 to \$30.

(8) The cultivation of hemp and flax, of which there is none raised here, would give good results.

A. HERNANDEZ.

XOCHIAPAM, July 24, 1885.

Municipality of Zentla.

(1) Thirty-one cents to 38 cents.

(2) They work by *tareas* (tasks) of 900 square varas.

(3) There are sufficient hands.

(4) Corn, frijol, rice, coffee, sugar-cane, yucca, excellent fruits, such as mamey (fruit of the mamee tree) oranges, manila mangoes, *pomas rosas* (a red apple), pomegranates, and all the fruits of Córdoba, as it is on the same meridian, 15 leagues to the north, with a better temperature, and one kilometer (62 miles) from the colony named "Manuel Gonzalez." The principal crop is coffee, and it produces 800 quintals (101½ pounds each) in the municipality at \$7. The corn sells at \$4, and rice at \$2 the arroba.

(5) Meat, \$2 the arroba; frijol, \$4 the carga (5 bushels). Vegetables and all kinds of garden stuff very cheap, as well as molasses. Honey, \$30 the quintal (101½ pounds).

(6) Neat cattle, \$14; horse stock, \$20; pigs, \$1; sheep, scarce.

(7) The purchase made by the worthy secretary of public works for the "Manuel Gonzalez" colony, one kilometer from this town, on such advantageous conditions for the Government, will serve to give you an idea of the great advantages these lands afford for colonization. There are more than 15 leagues of fertile land in this municipality entirely uncultivated, water in abundance, and virgin woods. These can be purchased for \$500 the caballeria (107½ acres, English), and even at a lower price. A horse can trot to Vera Cruz in seven hours. The road is level generally.

(8) A spinning factory, as the cotton is raised near by. The Mexican Railway passes within 5 leagues from here. Establishments for making sugar, *aguardiente* (brandy), hats, boots, and shoes.

ZENTLA, ———, 1885.

Hacienda 'el Mirador.

(1) Thirty-one to 37½ cents per day.

(2) Properly speaking there are no contracts. Usually the price is for a day's work, although some sorts of work are done by tasks, as clearing and cleaning ground. A *tarea* (task) of 900 square varas is considered a day's work. In harvesting sugar-cane a *tarea* is cutting 1,000 stalks and tying them into 40 bundles of 25 canes each; for this 25 to 37½ cents is given. In cutting wood a *tarea* is to cut a pile 4 varas (say 11 feet) long, 1 vara (2 feet 9 inches) high, and 1 vara wide, paying 50 cents if the wood is cut up ready for use and 31 cents if in large sticks. In harvesting (cultivating) coffee 37½ cents is paid for gathering one-fourth of a *carga* (1½ bushels), and 12½ cents is paid for harvesting the same quantity of corn in the ear.

(3) There are sufficient hands; in harvest, squads of laborers come in from the neighboring towns.

(4) The principal products are: Coffee, sugar-cane, piloncillo, corn, tobacco, frijol, chile (mountain), and rice.

The annual harvest of this municipality (Jotutla) is estimated at: Coffee, 2,000 to 2,500 quintals (101½ pounds each); piloncillo, 4,000 to 6,000 arrobas (25½ pounds each); corn, 1,500 to 2,000 *cargas* (5 bushels each); tobacco, 200 to 300 arrobas; frijol, 100 to 200 *cargas*; chile (mountain), dry, 200 to 300 cuartillos (.83 quart each); rice, 150 to 200 arrobas.

(5) Retail prices are as follows: Beef, 12½ cents pound; pork, 18½ cents pound; corn, \$4 to \$5 *carga* (5 bushels); frijol, \$10 to \$12 *carga*; rice, \$1 to \$1.06½ arroba (25½ pounds); lard, \$5 to \$6 arroba; piloncillo (4 panelas for 12½ cents), 3 cents pound; flour, 12½ cents pound; coffee, in grain, 6½ cents pound.

(6) Work-horses, \$20 to \$50; mares, 25 per cent. less; breeding cows, \$10 to \$18; milch-cows, \$20 to \$40; bulls and lean steers, 3 to 4 years, \$18 to \$20; fat, having two to three arrobas (50 to 75 pounds) of tallow, \$28 to \$34; sheep, \$2 to \$2.50; hogs, one to two years old, \$6 to \$8; pigs, four to five months, \$1 to \$2.

(7) Lands may be acquired with facility; and prices vary, according to class and location, from 50 cents to \$2 or \$3 for a *tarea* (task) of 900 square varas.

(8) These could be established with good results: Silk culture, planting of oleaginous seeds, &c., paper manufactures (using the many native fibers), mills for oil and flour, and soap factories.

F. SALTORIUS.

MIRADOR, July 3, 1885.

Canton de Orizaba.

(1) Thirty-seven and a half cents per day, except as stated in No. 3.

(2) There are no other contracts than those established by inveterate custom, dividing workmen into the two following classes:

Traveling laborers, who go from time to time to various *fincas* in search of work. These get no more than the 37½ cents per day above mentioned.

Domiciled workmen, who are given materials with which to build a house, and wood for the kitchen. These may leave when they choose, leaving to the owner the house they have built.

Others are called renters; and these pay a previously stipulated rental for the land they cultivate, with obligation to give their personal aid and teams when needed, for which they are paid. These laborers are in certain seasons of the year, and on fixed days in each week.

(3) There is no scarcity of laborers; for in harvest, and even when there is not sufficient labor for the domiciled workmen, contracts are made in the neighboring villages before the local authorities, by squads of laborers. The principal points of these contracts are: The time more or less they shall work, the daily wage, which is usually 44 cents per day and occasionally 50 cents, and the payment to each one of a small advance, which is to be deducted from their labor. In only one hacienda (Tuxpango) is a ration of frijol, chile, and salt given to these gangs of workmen.

(4) The principal products are sugar-cane, coffee, and tobacco. Of corn only enough for home use is raised, in spite of the fact that this grain produces two crops per annum.

The sugar-cane *fincas* (properties) produce approximately as follows:

Hacienda.	Sugar.	Aguardiente.
	Arrobas.	Bayals.
Jalapilla	50,000	3,000
San Antonio	18,000	1,000
Jazmin	40,000	2,000
Tuxpango	40,000	3,000
Cuantlupam	10,000	1,000
Escamela	30,000	2,000
Toculla	6,000	1,000
Others .....	.....	1,900
Total	194,000	14,900

The price of sugar varies with the classification, and, without much change, is at wholesale as follows: White, arroba (25½ pounds), \$2.37½ to \$2.50; mixed, arroba, \$2.12½ to \$2.25; mixed white, arroba, \$2 to \$2.12½; common, arroba, \$1.75 to \$2; inferior, arroba, \$1.50 to \$1.62½. Muscovada is also made (centrifugal) for export to Europe when it commands a good price there, and this grade has varied from \$1.12½ to \$1.25 the arroba. This grade can be made at these figures, as it is refined quickly by means of modern machinery, economizing the time used in making in pans.

The usual price of aguardiente is \$9 to \$10 the barrel of 150 cuartillos (say 121 quarts).

The coffee and tobacco *fincas* and their approximate annual product are as follows:

Ranches, &c.	Tobacco.	Coffee.
	Arrobas.	Quintals.*
Group of ranches on the plain of Samidero	5,000	1,900
Cuantlupam and neighboring ranches	3,000	4,500
Tenango and Cuicnapam	1,500	100
Small <i>fincas</i> in suburbs of Orizaba	1,800	1,200
Ranches of Jalapilla .....	.....	300
Naranjal, Coetzala, and Tenejapa	4,000	1,500
Juchiles and Cuichapa	2,500	500
Omesaca and neighboring ranches	6,000	2,500
Tuxpango and neighboring ranches	2,000	1,500
Toculla and Santa Ana	2,500	1,200
Total	28,000	15,200

* Of 101½ pounds each.

The price of tobacco depends on its quality and the treatment it has received. Worked tobacco is sold in three sorts: whole, broken, and inferior. When tobacco has good demand these three classes have sold, in equal quantities of each, at \$4 to \$4.50 per arroba (25½ pounds). In plugs (packs, slabs, strips), the three grades mixed, colored, and flavored, from \$2.75 to \$3.50, according to size and quality. The very lowest prices are for worked \$3, and for plugs \$2 to \$2.75. When the prices go down to this extreme point the crop for the following year is reduced, as these prices cause a loss to cultivators.

The price of coffee depends upon the demand in the United States, and sells in times of good prices from \$11 to \$13 quintal, falling in dull times to \$8 to \$8.50. It has stood at the latter figure for some time, and many have abandoned the cultivation of coffee and tried something else.

(5) Meat, without bone, arroba (25½ pounds), \$3; meat, with bone, arroba (25½ pounds), \$2.25; corn, carga (5 bushels), \$5.50 to \$6; frijol, carga (5 bushels), \$9 to \$10, and sometimes \$12 to \$14; lentils, \$4.50; *haba* (a bean), \$3.50; lard, \$5.50 to \$6; salt, arroba, 8½ cents; *panela* (crude sugar), quintal (101½ pounds), \$6; sugar, arroba, \$2 to \$2.75.

(6) Hogs come from the valley of San Andres and Huamantla and sell at \$2.25 to \$2.50 the arroba (25½ pounds); milch cows, \$22 to \$25; bulls, \$15 to \$25; sheep, also brought in, \$3 to \$3.50. Horse stock has no fixed price. All farm work and carting is done with oxen. It is very rare to find a hacienda where horses or mules are used with harness.

(7) There are no facilities for acquiring lands. Only small fractions, of 16,000 square varas, valued at \$80 to \$100, can be obtained. Lands outside can be had at \$1 hectare, but they are covered with wood and cannot be used until cleared.

(8) Many industries might be established here—hemp and oil from seeds, wood, and other similar fabrics, using the abundant water-power of this valley; oil of *palma christi* for medicinal and domestic uses, white wax, silk, starch from yucca and sagu, orange wine, apple wine, and peaches.

The *palma christi* plant grows naturally and abundantly. There is now in the suburbs of this city a small finca with 1,000 white mulberry trees in full growth, and 4,000 more young plants which can be used in a few months.

DIEGO ESPINOSA.

ORIZABA, July 2, 1885.

CANTON OF TUXTLAS.

Municipality of San Andres Tuxtla.

(1) The established price for daily wages is 37½ cents, but sometimes this has been raised to 62½ cents during the short period of harvesting the tobacco crop. Anything above 37½ cents may be considered unusual.

(2) Daily wages as above stated, or monthly at the rate of \$10, more or less.

(3) Field hands for the greater part of the year are scarce, especially at the time of harvesting the tobacco.

(4) The principal products of this municipality are: Tobacco, corn, cotton, frijol, rice, *panela* (brown sugar), *aguardiente* (brandy), sugar, and coffee. The average annual product and prices are: Tobacco, 25,000 arrobas (25½ pounds), at \$4.50; corn, 30,000 zontles (400 ears), at \$1; cotton, 20,000 arrobas, at \$1; frijol, 28,000 arrobas, at 75 cents; rice, 3,000 arrobas, at \$1.25; *panela*, 38,000 arrobas, at 75 cents; sugar, 3,000 arrobas, at \$2.50; coffee, 1,000 quintales (101½ pounds each), at \$10; *aguardiente* (brandy), 1,250 barrels, at \$7.

Vanilla, caoutchouc, and *achiote* (heart-leaved bixa or annatto) are produced on a small scale, without any cultivation.

Cocoa, which is not raised, has given satisfactory results in the trials which have been made.

The raising of garden stuff would give magnificent results, as has been proved by trials on a small scale.

Experts have decided that peas of all kinds raised here are of superior quality.

Among the different kinds of fruit raised in more or less abundance, bananas, oranges, lemons, mangoes, aguacate, pineapples, and cocoanuts are notable. Fine woods and wood for building are abundant. These have always sold at good prices, which are every day improving.

(5) The retail prices are: Beef, \$3 arroba (25½ pounds); lard, \$5 arroba; corn, *panela*, &c., at the prices given in the preceding answer.

(6) Neat cattle, \$10 to \$30; horse stock, \$20 to \$50, and hogs at the rate of \$3 arroba.

(7) There are private lands which might be acquired at \$5,000 the sitio de ganado mayor (4,338 acres, English). No sales have been made lately. The communal lands of this municipality are being divided, and the price of the lots has been fixed at \$10.50 per hectare.

(8) The industries which could be successfully established are cotton factories, breweries, factories for making pottery, tanneries, and apiaries.

P. CLAUSSEN.

SAN ANDRES TUXTLA, August 7, 1885.

STATE OF ZACATECAS.

DISTRICT OF JUCHIPILA.

(1) Eighteen to twenty-five cents per day. Those who work by the month get \$4 per month, 12 cents weekly in money, and three measures of corn.

(2) Answered above.

(3) There are sufficient.

(4) The principal product of this municipality is the sugar-cane, of which not less than 4,000 to 5,000 cargass of twelve arrobas each are produced annually. The common prices are from \$12 to \$15 per carga (304½ pounds), almost the whole of which is consumed in the capital.

(5) Corn, \$1 to \$4.50 fanega (2½ bushels); frijol, \$1.50 to \$4.50 fanega; meat, 6½ cents to 12½ cents per pound.

(6) Neat cattle have increased in price: Milch-cows, \$30; fat oxen, \$40; horse stock is very scarce; sheep, none; and hogs from \$1 to \$6 per head.

(7) Property in land is very much subdivided, and although some few can alienate lands it is not possible to put a fixed price.

(8) Silk culture, and wool and cotton factories.

Municipality of Aposol.

(1) Wages are the same as in the other municipalities, and, besides this, the laborers are permitted to seed and cultivate a small portion of ground, using the oxen of the proprietor. They are also allowed, as in the other municipalities, lands on shares, halves, or thirds, according to their class.

(2) There is a reciprocal obligation between master and servant; the latter being obligated to work all days except Sunday, and the master to pay his wages as earned.

(3) There are sufficient hands, and during the gathering of the cane when more are needed many come from neighboring towns in search of work.

(4) Sugar-cane, corn, and frijol are the principal products. The crop of sugar-cane amounts to, at the lowest, 5,000 cargas (304 pounds each), selling usually at \$10 the carga; corn about 3,000 fanegas (2½ bushels each), at \$2; and frijol, 200 fanegas, selling at \$6 per fanega.

(5) Retail prices: Corn, 8 cents the medida (measure); frijol, 25 cents; meat, 12½ cents pound; chile, 25 cents pound; and salt, 6½ cents pound.

(6) Neat cattle sell at from \$3 to \$20 per head; horse stock, not gentled, \$3 to \$10; (gentled stock cannot be given, the price varies so greatly;) sheep, none, and hogs sell for from \$1 to \$10 per head.

(7) Lands can be easily acquired and the last sales have been at 18 cents the square meter of irrigated land; \$25 per fanega (ground for seeding 2½ bushels shelled corn) of plow land (not irrigated); and \$100 per caballeria (107½ acres, English) of grazing land.

(8) Very few industrial establishments exist in this municipality, and it is doubtful if any could be established with good results.

PEDRO D. QUIRARLE.

JUCHIPILA, June 29, 1885.

DISTRICT OF NIEVES.

(1) Laborers make 25 cents per day.

(2) The laborer works from sun to sun, or he performs his task (*tarea*) and receives his pay in effects.

(3) There are plenty of hands, in spite of the emigration of many families in search of subsistence, which the common people gain with so great difficulty, due to the scarcity of the rains for the past four years. No scarcity of hands.

(4) Principal products are: Corn, at \$1.50 arroba (25½ pounds); wheat, \$3 to \$4.50 fanega (2½ bushels); frijol, \$2.50 arroba; chile, 37 cents pound; skins, \$2 to \$3 arroba; wool, \$2.50 arroba; tallow, mezcal de sotol, tuna, honey, and various fruits.

(5) Retail prices are: Meat, 19 cents pound; rice, 12 cents to 14 cents pound; salt, 3 cents pound; sweets, 8 cents to 12 cents; sugar, 18 cents pound; lard, 25 cents to 30 cents pound; flour, \$1.50 to \$1.75 arroba (25½ pounds); soap, 16 cents pound; charcoal, \$1 to \$1.50 carga; wood, 18 cents to 25 cents carga.

(6) Neat cattle, scarce; oxen, \$20 to \$25; bulls, \$15 to \$20; cows with calf, \$12 to \$14; mares, \$4 to \$6; wild horses, \$8 to \$10; gentle horses, \$12 to \$15; sheep and goats, \$1 to \$1.50; hogs, scarce, \$3 to \$5 per head.

(7) Lands are acquired with difficulty; and the latest sales were at \$2,000 to \$3,060 per sitio de ganado mayor de agostadero (4,398 acres, English, of grazing land).

(8) There could be established with good results manufactories of yarn and fabrics of wool, cotton, pita, ixtle, silk, of aguardiente, alcohol from dates, of sotol de maguay from tuna, grapes, *peron* (a large pear), and quince. There could also be constructed—and it would be of great benefit—a large dam, at small cost, in a suitable place where there is a permanent current, called the *boquilla de la cienega*, to hold a great supply of water with which to irrigate a large quantity of suitable lands.

L. GALLARDO.

NIEVES, June 26, 1885.

DISTRICT OF PINOS.

Municipality of Villa Garcia.

(1) The usual price is \$5 to \$6 per month, including ration; generally paid in effects, rarely in money.

(2) Usually the peon receives an advance and enters service for an unlimited time, getting his \$5 or \$6 monthly, including the ration which he receives in effects or pro-

duce. If he loses time this is deducted. In the other case extra laborers are paid from 19 cents to 25 cents per day, paid weekly or monthly in money or effects as was agreed upon.

(3) Enough and sometimes an excess.

(4) Principal products are wheat, corn, frijol, and chile. The average annual crop of wheat is 300 cargas (5 bushels each), and sells usually at \$6; corn, 30,000 fanegas (2½ bushels each), selling at \$1.25 to \$1.50 fanega; frijol, from 2,000 to 3,000 fanegas, at \$2 fanega; and of chile, 3,000 arrobas (15½ pounds each), at \$1.50 arroba.

(5) Retail prices: Meat, 12 cents pound; corn, 25 cents almud (6¼ quarts); frijol, 50 cents almud; lard, 25 cents pound; salt, 3 cents pound; and sugar, 15 cents pound.

In usual years corn and frijol sell at one-half the above prices.

(6) Cows and bulls, \$12; oxen, \$16; horses, \$15; sheep, \$1; hogs, lean, \$1.50; fat, \$3.

(7) No chances to buy land, as nearly all the fincas are reduced to the lowest possible quantity of land, owing to frequent divisions. Last sales have been at \$300 caballeria (107½ acres, English).

(8) Some slight attempts have been made to cultivate tobacco, lentils, hemp, and cotton, with favorable results, but water is not plenty; in lands where there is no water the maguey might be planted on a large scale and profitably.

M. MORFIN CHAVEZ.

VILLA GARCIA, June 26, 1886.

DISTRICT OF VILLANUEVA.

Municipality of Villanueva.

(1) Four dollars per month and 2 almudes (say 13 quarts) of corn weekly.

(2) The established conditions of labor are as follows: The owner of a finca rents his plow lands at a fixed rental to be paid by the rentor, although actually no owner does at present rent his lands thus. Lands are also, and usually, rented on shares. Those who rent on halves receive land, teams, and seeds, make all the harvest and get half the crop. In the other case the land only is furnished by the owner and he gets one-third. Another method is for the owner to give land, one ox, seed, and pay half the expense of the harvest and divide the product equally.

(3) Sufficient.

(4) Principal products are corn, frijol, wheat, barley, chile, and potatoes. The annual crop in former years has been 50,000 fanegas (2½ bushels each) of corn, selling at \$1.50 each; 2,500 fanegas of frijol, \$2; 1,000 cargas (5 bushels each), \$10 carga; 200 arrobas (25½ pounds each), \$4.50 carga; 1,500 arrobas chile, \$2.50; and 100 fanegas potatoes, at \$4 fanega.

(5) Present retail prices: Beef, \$1.50 arroba (35½ pounds); pork, \$2; corn, \$2.50 fanega (2½ bushels); frijol, \$5.50; salt from Colima, \$1.50 arroba; common, 50 cents; sugar, \$3.50 arroba; *arroz de leche* (made of rice, sugar, &c.), \$3; tobacco, sorted, from Orizaba, \$15.62; common, \$2.50; chickpeas, \$5.50 fanega; sweets, \$18 carga; flour, \$12 to \$18; tallow, \$4.50 arroba; and lard, \$4.

(6) Neat cattle, one to two years, \$4; two to three years, \$6; three years and up, \$10; gentle horses, \$15; wild, \$6; sheep, \$2; hogs, \$2.50.

(7) There is no chance to buy lands, because this place is surrounded by grazing haciendas. This causes the great poverty of the people. No sales have been made lately.

(8) The great scarcity of water prevents any development. The opening of an artesian well near this city is considered a necessity.

TEODORO RIVERA.

VILLANUEVA, June 18, 1885.

Municipality of Villa del Refugio.

(1) Workmen on the hacienda de Santiago earn from \$1 to \$4.50 per month, and one or two almudes (6¼ quarts each) of corn a week, and the other hired hands of this municipality earn 12 cents per day.

(2) The contract with the workmen on said hacienda is to pay them with the products of the finca, and they work from sunrise until sunset.

(3) There are sufficient.

(4) Corn and frijol are the principal agricultural products of this municipality. The crop of corn for 1884 amounted to 24,780 fanegas (2½ bushels each), and the frijol crop to 3,500; corn usually sells at 75 cents the fanega and frijol at \$1 the fanega.

(5) The retail prices of the principal articles of consumption are: Beef, at \$1.25 the arroba (25½ pounds); corn, at \$2.25 the fanega (2½ bushels); frijol, \$5 the fanega; Co-

lima salt, at \$1.50 the arroba; salt, called *arribeña* (common), at 75 cents; *chile* (pepper), at \$3 the arroba; wood, 12 cents the carga (of four arrobas, say 102 pounds), and coal, at 25 cents the carga of the same weight.

(6) Neat cattle, \$16 for an ox, \$10 for a bull, \$12 for a cow, \$8 for a heifer calf, and \$4 for a bull calf; horsestock, \$10 to \$25; sheep, 75 cents to \$1; hogs, \$1.50 to \$2.

(7) There is no facility for acquiring private lands, and when an opportunity occurs it is on a very small scale, because only one or two *fanegas de sembradura de maiz* (sufficient to seed 2 fanegas—5 bushels—of corn) of land are sold, and the value of one fanega is \$80 on the *mesas* (table-lands) and \$40 on the *bajos* (low lands). The price of the *eriazos* (uncultivated lands) is \$60 for a caballeria (107½ acres, English) for those which cannot be utilized for tillage.

(8) As there are no mines nor other veins of metals, and no bodies of water, it would be impossible to establish any industry which would give a profitable result.

M. DE AVILA.

VILLA DEL REFUGIO, June 26, 1885.

NOTES.

Crops of Austria-Hungary.—In Austria the harvesting of rye has begun in South Tyrol, Carinthia, Carniola, and other Alpine regions. On an average the prospect of the yield is little more than middling. The reports about the wheat crop are somewhat more favorable, with the exception of Silesia, and a good middling yield is exacted. Barley has suffered in many localities by too much rain, and is full of weeds. The condition of the oat crop is reported as good, with the exception of Silesia; corn has suffered by the too frequent rains, and could not be cultivated. It is consequently full of weeds. Potatoes are threatened with the rot. The hay crop with the exception of East Galicia is poor, and almost totally lost. Rape will yield a middling crop. The reports about hops are favorable, except in some localities of Bohemia, where insects are injuring the vine. The grape blossoms in Lower Austria have suffered, and in South Tyrol traces of the *pernospera* have been found. In Istria and Dalmatia the grape-vines and olives are in good condition. Prunes will yield an excellent crop; all reports agree as to their excellent condition.

Hungary.—Up to the 5th of July 11 per cent. of the whole area of the wheat fields of Hungary promised less than a middling crop, 70 per cent. a middling good crop, and the balance a more than middling good crop.

EDMUND JUSSEN,
Consul-General.

VIENNA, July 13, 1886.

Grain exports from Australia.—Consul-General James Morris Morgan reports the Victorian exports of grain (other than rice) for the years 1884 and 1885.

Description.	1884.		1885.	
	Centals.	Value.	Centals.	Value.
Barley, Victorian.....	12,554	\$27,305	5,144	\$10,825
Barley, other.....	3,439	7,655		
Barley, pearl.....	1,880	8,825	1,853	13,270
Beans and pease.....	21,985	37,085	6,750	13,415
Grain.....	657	1,175		
Maize.....	907	1,810	1,551	2,495
Oats, Victorian.....	21,588	68,400	8,853	15,920
Oats, other.....	13,479	25,765	15,161	34,280
Peas, split.....	245	855	194	785
Rye.....	132	330	184	325
Wheat, Victorian.....	4,120,321	7,134,525	1,208,094	2,693,340
Wheat, other.....	8,400	14,150	2,601	4,345

MELBOURNE, June 16, 1886.

Consular Agent J. W. Smith reports return showing the quantity of grain exported from South Australia, produce of the colony, during the years 1884 and 1885.

Description.	Quantities 1884.	Quantities 1885.
Barley.....bushels..	2, 198	2, 887
Bran.....tons.....	3, 459	3, 740
Flour.....do.....	84, 961	68, 546
Oats.....bushels..	9, 867	11, 216
Pease.....do.....	3	50
Pollard.....tons.....	379	675
Wheat.....bushels..	8, 371, 089	8, 999, 981
Wheat meal.....tons..	137	18

PORT ADELAIDE, *June*, 12, 1886.

JAMES M. MORGAN,
Consul-General.

Coke production of Belgium.—The following report of Consul Robertson shows the quantity of coke made in Belgium during the year 1885:

Divisions.	Furnaces.		Number of work- men.	Quantity of coal consumed.	Quantity of coke produced.	Percentage.	Average commer- cial value per ton.
	Active.	Idle.					
First district, Mons-Coneh :				<i>Tons.</i>	<i>Tons.</i>		<i>Francs.</i>
East section.....	290	190	331	153, 932	103, 470	69. 56	16. 05
West section.....	420	68	345	234, 400	192, 125	67. 50	14. 75
Second district, Mons-Centre.....	1, 067	424	335	752, 913	570, 329	75. 65	12. 55
Third district, Charleroi.....	566	577	435	415, 662	312, 010	76. 50	13. 10
Fifth district, Liege—left bank of the Meuse.....	1, 020	470	445	494, 901	333, 085	71. 35	13. 45
Sixth district, Liege—right bank of the Meuse.....	270	266	166	187, 887	126, 456	72. 50	12. 38
Total and average.....	3, 723	2, 004	2, 307	2, 292, 696	1, 673, 475	73. 21	13. 35

Comparative tables for five years.

Years.	Number of workmen.	Tons of coke produced.	Value per ton.
1881.....	2, 256	1, 324, 069	<i>Francs.</i> 15. 28
1882.....	2, 519	2, 063, 249	17. 73
1883.....	2, 474	2, 077, 051	17. 08
1884.....	2, 074	1, 512, 148	16. 37
1885.....	2, 307	1, 673, 475	13. 35

In the fourth district, that of Namur, no coke is produced.

The production in 1884 was 1,812,148 tons, while in 1885 it was only 1,673,475 tons, a decrease of 133,673 tons, or 7 per cent. This shrinkage appears even greater if the value of the production be taken into account, for in 1884 it was 26,946,640 francs (\$5,900,721), while in 1885 it was only 22,438,444 francs (\$4,330,620), a difference of 4,508,196 francs (\$870,062), being a decrease of 17 per cent. The year 1884 was, in turn, inferior to that of 1883, both in the amount and value of the production. The value per ton in 1885 was 1.52 francs less than in 1884. It is not believed that the downward tendency in prices can be arrested during the current year, as it has already

been found necessary to shut down some of the furnaces, and the price of coke has fallen to the lowest point it has ever reached, and it is expected to fall to 10.50 francs per ton for unwashed. The causes are diverse, and are both local and foreign.

The general depression in all departments of iron and steel manufacture has not only reduced the home consumption, but also the exportations. In addition, the competition of the Germans and French is continually cutting into the Belgian exportations; the former by reducing the cost of production, and the latter owing to exceptionally favorable railway rates.

G. D. ROBERTSON,
United States Consul.

UNITED STATES CONSULATE,
Verviers and Liège, June 24, 1886.

Commerce of Rheims with the United States.—The first quarter of the year 1886 has closed in a most satisfactory manner to many of the wine merchants of Champagne, in the export of their sparkling merchandise to the several American ports, the export of champagne sparkling wine to the United States from this consular district for the quarter ending March 31, 1886, having amounted to 41,887 cases (502,644 quarts), of the value of \$589,639.98, which is an increase of 3,887 cases (46,644 quarts), of the value of \$73,741.22, over the quarter ending March 31, 1885, and an increase over the first three months of 1884 of 5,729 cases (68,748 quarts), of the value of \$107,778.08.

When I say that the first quarter of 1886 has closed with satisfaction to the wine merchants of Champagne, I wish to be understood as saying that such satisfaction only relates to the markets of the United States, as in the general markets of the world the champagne sparkling wine trade is said to have never been in a more depressed and unsatisfactory condition than at the present time, and as the many difficult complications of the international and internal political and social questions increase, the condition becomes even more and more unsatisfactory, and it has now arrived at that point where it can hardly be worse.

While the shipment of champagne to the United States during the quarter shows an increase of \$73,741.22, there are but five other articles which show an increase of over \$5,896.92, a total increase of \$79,638.14; while on the other hand the fine woollen dress goods of Rheims manufacture show a decrease of \$54,249.17, and other articles a decrease of \$6,163.72, a total decrease of \$60,312.89, leaving a net increase of \$19,325.25.

The following table is an exhibit of the total value of declared exports from this district to the United States during the quarter:

Articles.	Value.
Champagne (41,887 cases—502,644 quarts)	\$589,639 97
Merinos, cashmeres, and miscellaneous dress goods	18,461 15
Willow, raw and manufactured	13,075 15
Glycerine	1,498 28
Muslin (cotton gauze)	924 43
Watch-crystals	870 62
Brandy	728 62
Dessert wine	580 12
Syrups	316 47
Lithographed advertising cards	100 30
Corsets	34 91
Total	626,184 41
Total for the first quarter of 1885	606,859 16
Increase	19,325 25

RECIPROCAL TRADE.

While I am able to report that the American merchants have, during the past three months, purchased from the exporters and manufacturers of this district merchandises to the value of \$626,184.41, it is quite doubtful if American merchandises to the value of \$600 has found its way into this district. It is certain that there has been no direct importation of American goods into this district, and that the sale of such goods in this section of France is always unimportant. Of late years the people of the United States have paid to the people of this district an annual average sum of more than \$3,500,000 for their products, but have in return received no reciprocal trade worthy of mention. A few years ago the product of the American hog was largely consumed by the people of this district, giving them a cheap and nutritious food, and there was

reciprocal trade between the two countries, but the markets of France were closed against our pork products, under the false plea of sanitary measures, the necessity for which has been repeatedly denied and the denial proven by the highest medical and scientific authorities of France.

If reciprocal trade shall be made the motto of American commerce, the commercial world will be soon courting our friendship and favors, and we shall no longer have difficulty in finding open and ready markets for our agricultural, mechanical, and commercial products, in nearly all countries. It would be well, I think, to apply this reciprocal doctrine to our trade with all nations, and by that means secure a measure of justice for our commercial interests, which has already been much too long denied us.

JOHN L. FRISBIE.

RHEIMS, FRANCE, April 1, 1886.

Hawaiian Islands.—The following trade tables were transmitted by Minister George W. Merrill, July 3, 1886:

Quantities and values of the principal domestic exports for the six months ending June 30, 1886 and 1885, respectively, showing increase and decrease.

Articles.	Six months ending June 30, 1886.		Six months ending June 30, 1885.		Quantities.	
	Quantity.	Value.	Quantity.	Value.	Increase.	Decrease.
Sugar, pounds.....	160,636,998	\$7,361,024 00	121,873,375	\$5,859,425 32	38,763,623	.....
Rice, pounds.....	3,178,050	150,953 51	3,384,853	164,633 22	.....	206,803
Hides, pieces.....	13,297	49,344 43	10,191	40,164 28	3,106	.....
Bananas, bunches.....	22,442	21,177 25	29,847	29,930 00	.....	7,405
Wool, pounds.....	73,180	7,000 00	71,639	6,584 97	1,541	.....
Goat-skins, pieces.....	7,654	5,025 95	9,802	6,935 18	.....	2,143
Molasses, gallons.....	35,480	3,988 70	27,526	2,986 50	7,954	.....
Tallow, pounds.....	15,885	795 00	.....	.....	15,885	.....
Betel leaves, boxes.....	164	777 50	213	1,225 00	.....	49
Coffee, pounds.....	4,023	742 50	1,375	241 50	2,651	.....
Sheep-skins, pieces.....	5,135	540 50	5,603	1,407 62	.....	468
Dried bananas, boxes.....	.....	.....	892	4,265 00	.....	892
Awa, pounds.....	865	73 70	.....	.....	865	.....
Calf-skins, pieces.....	.....	.....	26	20 00	.....	26
Sundries.....	.....	3,853 85	.....	6,806 76	.....	.....
Total value.....	.....	7,605,296 89	.....	6,124,625 35	1,480,671 54	.....

In this connection are submitted the following statistics, showing that American vessels carried nearly 80 per cent. of the total value of the exports for the six months ending June 30, 1886:

Nationality.	Honolulu.	Kahului.	Hilo.	Total at all ports.	Per cent. of total.
American.....	\$4,664,334 70	\$1,353,690 00	\$55,404 81	\$6,073,429 51	79.86
British.....	696,684 93	.....	.....	696,684 93	9.14
Hawaiian.....	589,526 36	.....	34,959 27	624,485 63	8.21
German.....	208,696 82	.....	.....	208,696 82	2.77
Total value.....	6,159,242 81	1,353,690 00	90,364 08	7,605,296 89	100.00

Sales of Sumatra tobacco.—The export of Sumatra tobacco has been much less during the quarter just closed than it was during the same period of last year, having amounted to \$547,951.72 for the June quarter in 1885, and to only \$297,125.44 for the June quarter in 1886. Taking into consideration that about 52,000 bales have already been sold here by inscription during the past three months, and the fact of the presence of a large number of "tobacco merchants" from the United States without making any extensive purchases, the supposition seems

justified that the exports of the article to the United States during the current year 1886 will experience a very great falling off, and will, perhaps, amount to but little more than half of what they were last year.

The chief cause of this, as I am informed, is the high price the tobacco commands here, which appears to be regarded as too high, quality considered, for the American market.

D. ECKSTEIN,
Consul.

AMSTERDAM, *July 3, 1886.*

Fruit markets of Maracaibo.*—From the most reliable sources of information, the production of fruit may be estimated as follows: Oranges, 10,000,000; bananas and plantains, 7,000,000 bunches; pineapples, 300,000; cocoanuts, 37,000,000; which last produce about 14,000,000 kilos of oil, which is extracted in this district. The production is increasing and could be extended almost indefinitely.

There are no shipments of any of the foregoing fruits, except an insignificant quantity, comparatively, which is sent to the island of Curaçao, which lies almost within sight of the Venezuelan coast.

There is no foreign trade in any of the kinds of fruit mentioned. Prices are low. Oranges selling at times at 20 cents per hundred, bananas, from 15 to 20 cents per bunch, pineapples from 3 to 5 cents each, and cocoanuts at 2 cents.

No pains have ever been taken to cultivate fruit scientifically or to introduce improved varieties. The only difference noted is in the case of the banana, of which there are three kinds, the common yellow, a small, very sweet variety; and the large red kind which is also found in Cuba.

To the island of Curaçao there may be shipped annually 500,000 bunches of bananas and plantains, and the same quantity of oranges. The number of pineapples and cocoanuts sent to that island is of but little importance. There are no shipments to any other country.

There are no existing facilities for shipment.

In this district almost the entire amount of fruit produced is consumed locally. There is room to establish immense fruit farms which would give excellent results, and with fast steamers for transport, even the more perishable varieties might arrive in the United States in marketable condition.

Should such an idea be developed, it would open up an important industry in this section.

E. H. PLUMACHER,
Consul.

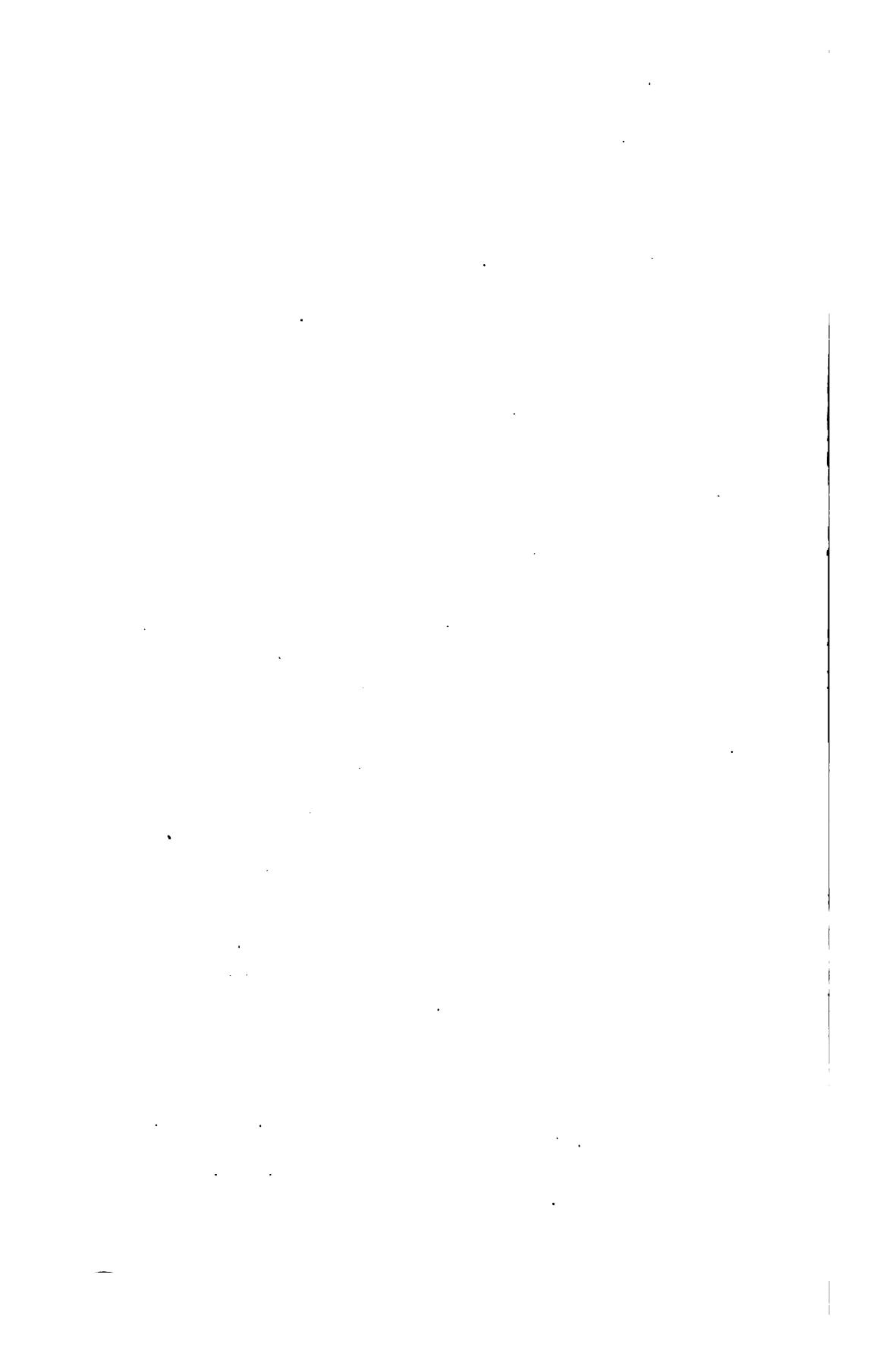
MARACAIBO, *July 8, 1886.*

Fruit market of Mexico.—Oranges are grown in small quantities in the southern part of this State and in occasional localities in Northern Mexico. Bananas and pineapples are grown near the Gulf coast in the southern part of this State. The possibilities of the culture of these three fruits are very great. The oranges grown are of a fair quality, and with care and good markets the product could be increased a thousand-fold. The quality could be easily improved by cultivation. Bananas and pineapples could be extensively cultivated along the lower Gulf coast. In its present undeveloped condition it is impossible to give the annual product of these fruits. The amount raised has not sensibly increased or diminished and awaits enterprise and favorable markets. Along this northern frontier these fruits may be shipped by rail to the United States. As these markets increase, the product and export of these fruits will increase to a considerable figure. At present this trade is almost entirely undeveloped.

WARNER P. SUTTON.

MATAMOROS, *July 7, 1886.*

* In continuation of Consular Reports No. 65, July, 1886, p. 213.



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UNITED STATES CONSULAR REPORTS.

REPORTS

FROM THE

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ON THE

COMMERCE, MANUFACTURES, ETC.,

OF THEIR

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NOTE TO BINDER.—A title-page for Volume XIX will be found after the index in this volume.

CONSULAR REPORTS

ON

COMMERCE, MANUFACTURES, ETC.

No. 68.--SEPTEMBER, 1886.

PRIVILEGES OF JEWS IN RUSSIA.

REPORT OF CONSUL-GENERAL YOUNG, OF ST. PETERSBURG.

The laws and regulations affecting the rights, privileges, and immunities of foreign Jews in the Russian Empire are numerous, and are different in the different provincial governments in the Empire. The number of Jews in the world at the present time is quite 7,000,000, of whom there are in Russia 3,500,000. Foreign Jews are prohibited from living in Russia unless they avowedly come for the purpose of entering into commerce on an extensive scale. The only exception to this rule is embraced in the ukase of 1831, whereby rabbis and men of letters of foreign nationalities sent in behalf of their Governments, and graduates, such as persons who are graduates in some branch of science are excepted; and these are permitted to live in Russia by the ukase of 1843.

The numerous laws for Jews are so vague that their rights and sojourn in the Empire depend upon their conduct, so that if it at any time seems good to the authorities of the province in which they live they may be removed from the country. As to the legislation for Jews, the Empire is divided into two great divisions, one where Jews may reside and the other where they cannot.

WHERE JEWS MAY RESIDE.

The following are the districts where Jews may live, and where they enjoy comparatively lenient restrictions:

The governments of Vilna, Volhynia, Grodno, Ekaterinoslave, Cherson, Kovno, Minsk, Mohilieff, Poltava, Podolie, Tchernagoff, Bessarabia, and Vitepsk.

In the latter two governments the Jews may live in the villages only if permission is granted to them temporarily. They are not allowed to live there as permanent inhabitants.

The Kingdom of Poland, viz, the governments of Warsaw, Lomja, Plotsk, Kalisch, Pietrokoff, Krice, Siedleto, Lublin, Suvalkie, and Radom, which, after the third division of Poland in 1799, were annexed.

The government of Kieff, except the town of Kieff; the government of Taurida, except the town of Sebastopol. With this there is this remark to make: Jews are not allowed to live in the said governments within 40 miles of the frontier.

In Odessa Jews are only allowed to live who were established there the 9th of October, 1859, and who have always had and still have a trade or industry of some kind. In the government of Courland, colony of Schloek-Livonia, Jews may only live if they have been written in the lists of the records of the population prior to the year 1835. In Riga, Jews may only live who have had fixed abode prior to the 17th December, 1861.

All other places in Russia they are not allowed to live.

RESTRICTIONS UPON ENTRANCE OF JEWS.

The conditions under which foreign Jews are admitted into Russia are different, accordingly as their abode is intended to be transient or permanent. Before entering the Empire of Russia a Jew must obtain permission of a Russian official abroad, ambassador or consul. If this is refused, he can appeal to the department of the interior of Russia, in which application he must state his purpose and motive for the desired visit; if he obtains permission, then the following conditions must be fulfilled: In the Jew regions of Russia, the abode for not more than six months is allowed to the foreign Jew on condition that he has fulfilled all other conditions. Longer than six months the foreign Jew cannot remain there, unless he has obtained the permit of the governor-general of the province and after having taken a patent of a merchant of first guild. For an abode of more than a year, or to establish himself permanently, the foreign Jew must have the permit of the ministry of finance, or interior, or of foreign affairs, and take at same time a patent of first guild merchant.

Foreign Jews who wish to visit the parts of Russia outside the Jewish region without having the direct purpose to trade, must have the permission of the department of the interior. If they wish to combine with their visit, although it may be for a limited time, the right to trade or do business there, they must, in order to take a patent as a merchant of first guild, obtain the permission of the ministers of finance, of the interior, and of foreign affairs, and this stipulation concerns also foreign Jews who desire to trade and to establish themselves permanently as traders beyond the Jewish regions.

The request required in above-mentioned cases to be classed as merchant of first guild, and which must be addressed to one of the above-mentioned ministries (to any one of them), must be accompanied by a declaration and by a statement, wherein it is stated that the Jew in question is in good position in his country and that he has a large business. It is not stipulated by whom this statement is made; it may be made by the governor-general of the government where he wishes to establish himself, by the committee of trade, or by a foreign authority; even there would be in some cases no more required than the statement being made by a well-known commercial firm with which the Jew has commercial relations. Foreign Jews are, in the same way as all other foreigners, bound to observe the same stipulations of the Russian passport system.

The Russian Government does not admit that the commercial treaties concluded between her and foreign powers give the right to demand that their Jewish subjects or citizens should be treated on the same footing as the Russian Jews.

As far as I have been able to investigate, I find that nothing concerning Jews is mentioned in any of the treaties between Russia and other nations, except that of Austria, which is not important to American Jews.

Foreign Jews have to submit to all legal restrictions stipulated for the Russian Jews, as, for instance, the payment of a special tax; they cannot enter the nobility; their children must attend special Jewish schools.

Within the last year a commission has been appointed by the Russian Government to reform and arrange legislation for the Jews in this Empire. I am informed that the commission has not as yet agreed upon a code of laws and regulations, but it is probable that a more lenient code will be proposed than now exists. The Jews have often taken part in the revolutionary proceedings in Russia in the past, and hence the prejudice that exists against them.

THE PASSPORT SYSTEM.

Russian legislation concerning passports prescribes that every foreigner who passes the Russian frontier must possess a legal passport to enter the Empire of Russia. In leaving the Empire he must be provided with a Russian passport of departure, or take care that on his national passport a visé of departure has been put by the Russian authorities. The passport of arrival is the national passport, which must have been given to the traveler of foreign nationality by the competent authorities of the nation to which he belongs; also, he must be provided with the visé of a Russian diplomatic or consular officer. This visé is granted to the travelers of all religious sects except Jews; to Jews it may be refused without any reason assigned. If the visé, however, is put on the passport of the Jewish traveler who wishes to stay in the Jewish region of Russia, the remark is added to the visé that the permission to remain in the Russian territory is only granted for that region.

In passing the frontier the traveler has to show his national passport. This is carefully examined, and if found to be correct it is provided with another visé, called the frontier visé. On his arrival at the place of his destination the traveler has to show his passport to the local authority, and the visé of the latter gives the foreigner a right to remain in Russia six months, beginning with the day when the passport has been provided with the frontier visé. After the expiration of six months he is obliged to provide himself with a passport for temporary sojourn, delivered by the local or provincial authority. This passport ordinarily is valuable for a year, and must be renewed from the day on which it expires. If this formality is not observed, the person in question has to pay a fine, increasing successively every day—in St. Petersburg and some other places $7\frac{1}{2}$ cents a day till a maximum of \$5. Until a few years ago this passport of sojourn was renewed on showing the expired passport at the place of arrival. Since the regulations concerning passports have become more rigorous, all foreigners previous to obtaining a renewal of passport of residence must exhibit their national passports.

The passport of departure is delivered by the Russian authorities at the frontier after the payment of a certain tax, if he shows his passport of residence or national passport.

Travelers who, during their stay in Russia, wish to visit several places in the Empire, are compelled to show their passports to the police, to be viséd at every arrival and departure.

The Russian Government sends over the frontier every person who does not claim to belong to some church, according to existing laws, since every one must belong to some religious sect, and no one is tolerated who cannot indicate a church of which he is a member.

Not only must all foreigners be provided with passports, but every man and woman in Russia must be provided with a passport, though they and their ancestors may have resided here and have been subjects of Russia for a thousand years, and these passports must be renewed annually, even to remain at home.

I have mentioned these facts concerning passports because it was impossible to treat of the rights of Jewish subjects, as well as foreign Jews, without doing so.

P. M. B. YOUNG,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
St. Petersburg, June 29, 1886.

FLOWER-FARMING AND PERFUME MANUFACTURE IN SOUTHERN FRANCE.

REPORT OF CONSUL MASON, OF MARSEILLES.

For nearly a century the culture of flowers on a commercial scale and the manufacture of perfumes and essences have formed a special and lucrative industry in Southern France. The principal mart of this dainty manufacture is at Grasse, in the department of the Maritime Alps, but it is also conducted on a more or less extensive scale at Sommières, Nîmes, Nyons, Seillans, and other points in the consular district of Marseilles. A considerable portion of the product is exported to the United States, and as this export is steadily increasing, it may be of interest to examine the conditions of soil, climate, &c., under which flower-culture has flourished in this country, and to inquire whether the same industry might not be successfully established in certain portions of the United States. It is stated by perfumers here that the manufacture of perfumes from orange-flowers has already been attempted in Florida and California, but that the enterprise has failed of complete success because these essays were made with flowers of the edible orange, grown upon low lands—conditions which would entail failure even in France, where the bitter and non-edible bigardier, or the bergamot, grown in locations more or less elevated, is universally used for the production of perfume.

The subject divides itself naturally into two topics: First, the culture of the flowers and blossoms; secondly, the manufacture therefrom of the pomades, essences, and perfumed waters of commerce.

I.—FLOWER-FARMING IN PROVENCE.

The kinds of flowers principally grown and their season of harvest, are the violet, jonquil, and mignonette, which are usually gathered in

February, March, and April, although in mild, moist winters the violets begin as early as December; roses and orange-blossoms, with thyme and rosemary, in May and June; jasmines and tuberose in July and August; lavender and spikenard in September; and the acacia in October and November. The harvest of flowers covers therefore about three-fourths of the year, but the season of greatest activity is May and June, when the roses and orange-blossoms are gathered. Thyme, rosemary, and lavender are among the minor products, grown principally by rural farmers of the grape and olive, who have at home the simple apparatus required to distill the flowers and produce a more or less inferior class of essences, which are used to dilute and adulterate the superior essences produced at the larger establishments in towns and villages.

A TYPICAL FARM.

The conditions of industrial success in flower-growing can be best studied by a specific example, and for this purpose we select the plantation of Madame de Rostaing, at Seillans, in the department of Var. It includes about 23 acres, located on the southern slope of the Maritime foot-hills, about 2,000 feet above the level of the Mediterranean, and perhaps 20 miles from the coast. The calcareous soil was naturally thin and poor, and the olive trees, which had occupied the ground for a century or more, prior to 1881, yielded but scanty and unsatisfactory returns. The slope of the surface was so steep that the waters of a spring, which flows from the rocks above the tract, could be but imperfectly utilized for irrigation, and the land was regarded practically worthless. In 1881 the proprietress caused the olive trees to be removed and the land prepared for flower culture. First, the ground was dug up to a depth of 4 feet, the larger stones removed and built into sustaining walls for the terraces into which the surface was divided and leveled. Along the upper margin of each terrace a shallow ditch was cut, connecting with transverse channels, which supply the spring-water for irrigation. The abruptness of the slope will be indicated by the fact that, on the tract of 18 acres, the terrace walls required to produce a series of level or gently sloping surfaces are 2,166 yards in length. Thus terraced, the tract yielded 17½ acres of prepared ground for planting. In the autumn of 1881, 45,000 tufts of violet and 140,000 roots of the white jasmine were planted. The following spring the remainder of the ground was planted with roses, geraniums, tuberose, and jonquils, and a laboratory erected for the manufacture of perfumes. The location proved to have been well chosen; the flower plants grew vigorously and strong, and in 1885, the fourth year after planting, the flower farm of Seillans, which had previously yielded a rental of \$115 a year, produced, according to the statement of the proprietress, perfumes valued at \$43,154, and giving a net profit of \$7,767.86!

The difficult nature of the ground had made its preparation unusually laborious and expensive, but in the foregoing balance sheet for 1885 interest on the entire investment is included in the expense account, so that the profits as stated purport to be clear and legitimate. Of course the plants and shrubs at Seillans have not yet reached their full productive capacity, but the results of the fourth year illustrate sufficiently how lucrative flower-farming may become in favorable locations and under good management.

ESSENTIAL CONDITIONS.

From observations at Seillans, and in the neighborhood of Grasse, where perfume-flower-growing is the leading branch of agriculture, the essential conditions appear to be:

(1) An altitude of from 500 to 2,000 feet. Flowers grown on such elevated locations are said to be far more rich in perfume than similar varieties which bloom in valleys and lowlands.

(2) A soil rich in calcareous elements.

(3) A situation sheltered from cold northern winds, and not subject to the white frosts which, in spring and autumn, affect the damp lowlands.

(4) In countries like Southern France, where the rainfall is always scanty and often wanting entirely from May until September, irrigation is essential to the culture of flowers as well as every other crop; but it would seem that in the vast expanse of the United States, between the thirtieth and fortieth parallels of latitude, there might be found locations which combine all the requisite conditions of soil and exposure with sufficient humidity to secure natural and prolific growth.

There remains, finally, the somewhat vague and intangible question as to how far usage and experience are really essential to success in flower-growing and perfume manufacture. The people of Southern France are prone to believe that certain things peculiar to this country can never be successfully produced elsewhere. The gourmand of Marseilles will tell you that "*bouille-abaisse*," the famous "plat" of fish and toast flavored with saffron, can never be well made outside of Marseilles; the confectioners of Provence have no fear that their glazed and crystallized fruits can ever be successfully imitated beyond the frontiers of France; and, similarly, the perfume-growers and distillers along this coast attribute their success not less to the peculiar climate of Provence than to their minute knowledge of every detail of the business, a knowledge acquired by more than a century of experience and transmitted from generation to generation of these simple, industrious people. Switzerland used to cherish similar ideas about watch-making and the embroidery manufacture, but both have been developed with entire success in other countries, and it is impossible to see in the perfume manufacture any art so obscure or difficult that it may not be learned and practiced successfully in any part of the United States which offers the requisite conditions of climate.

One essential principle in perfume culture is that all fancy and "improved" varieties of flowers are discarded, and the natural, simple, old-fashioned kinds are exclusively grown. The roses on the slopes of Seillans are the common pink ones that grow under farm-house windows throughout the United States. The single wild violet is preferred to all the larger artificially developed varieties, and if there is a "double" tuberose on the place, I failed to notice it.

Only the white jasmine is used, the yellow and less fragrant variety seeming to be either discarded or unknown. Jasmine plants are set in rows, about 10 inches apart, and are closely pruned. Roses are grown on the lower terraces, and are likewise cut low, and the ground between the plants heavily manured. After the roses have been gathered, the stem is cut to within a few inches of the ground so as to conserve for next season the entire vigor of the plant. During the harvest season traders, or middlemen, go through the country every day with wagons collecting flowers from the farms, for which they pay prices varying according to the extent of the crop and demands of the market. Their

fragrant load is hurried to the nearest manufacturer and delivered while the flowers are still fresh and crisp. The flowers should be gathered in the morning as soon as possible after the dews of the preceding night have disappeared.

II.—THE MANUFACTURE OF PERFUMES.

This includes the making of "pomades" and oils by the process of absorption, and of essences and essential oils by distillation. Every complete establishment is equipped with apparatus for all these processes. Pomades are the commercial vehicles for absorbing and transporting the perfumes of the jonquil, tuberose, jasmine, and some other species of flowers. A square frame, or *chassis*, of white-wood, about 20 by 30 inches in size, is set with a pane of strong plate-glass. On either side of the glass is spread a thin, even layer of grease—two parts lard to one of tallow—which has been purified and refined by previous boiling and straining. Thus prepared, the frames are piled up in ranks 6 or 7 feet high, to await the season of each special flower. When the blossoms arrive, the petals are picked from the stem (the pistils and stamens being discarded), and laid so as to cover the grease in each frame. These being again piled so as to rest upon their wooden edges, which fit closely together, there is formed a series of tight chambers, the floors and ceilings of which are of grease exposed to the perfume of the flower-leaves within. The grease absorbs the perfume, the spent flowers are removed daily and fresh ones supplied, and this process goes on from two to four or five months, according to the desired strength of the pomade, which, when sufficiently charged with perfume, is taken from the glass with a wide thin spatula and packed in tin cans or "stagnons" for export. By these methods the delicate odors of flowers are extracted and retained for transport to distant markets, where, being treated with alcohol, they yield their perfume to that stronger vehicle and produce the floral waters and extracts of commerce. Coarse pomades are made by boiling the flowers in the grease, and subjecting the residue to pressure. The spent pomades are used for toilet purposes and in the manufacture of fine soaps.

OILS AND ESSENCES.

The process of preparing perfumed oils involves the same principle, except that, instead of solid grease, superfine olive-oil is used. With this oil pieces of coarse cotton fabric are saturated, which are then spread upon wire netting framed in wooden chases about 3 by 4 feet in size. The flowers are spread upon the saturated cloths, and the frames piled one upon another so that the perfume of the flowers is absorbed, as in the previous process.

Essences and "flower waters" are produced by ordinary distillation, in which the flowers are boiled with water in large alembics; the vapor carries off the perfume and is condensed in adjoining copper tanks, like ordinary spirits. Some of the retorts used for this purpose are of sufficient size to receive at once half a ton of fresh flowers with the requisite water for their distillation. When "flower waters" are to be produced, alcohol is used in the distilling tank to receive the perfumes. By skillful combinations of the perfumes of different flowers, sometimes with the addition of chemicals, a large variety of handkerchief extracts, such as "Patchouly," "Jockey Club," "West End," &c., are produced at the original laboratory.

All these details of manufacture require careful and skillful manipulation, but there would seem to be no part of the process which cannot be promptly mastered by any good chemist with sufficient enterprise to import a few experienced French operatives. A mild, uniform temperature is secured by the heavy stone buildings in which the process of absorption is conducted, and scrupulous cleanliness is required at every stage of the manufacture. After removing the pomades from the frames, the glass is removed and cleansed with alkalies and the frames scraped to remove every vestige of grease, which, by becoming rancid, might spoil the product of the next operation.

The work of the manufactories is largely done by women, who earn from 20 to 25 cents in a day's labor of ten hours. During the busy season of roses and orange-flowers they earn half as much more by working until midnight or later. Laborers on the flower farms earn the modest wages which pertain to all kinds of agricultural labor in this country, for there is nothing in the culture of flowers that is beyond the skill and understanding of an ordinary farm-hand, when directed by an intelligent and experienced overseer. As the wealth and popular taste for luxuries in the United States have continued to increase, our country has absorbed a constantly increasing proportion of the perfume product of Southern France. If the low wages that are now paid for the labor of girls and women in many forms of manufacture in American cities could be utilized in districts adapted to flower-growing, it would seem that the essential conditions for transplanting that fragrant and lucrative industry to the western hemisphere would be practically complete.

FRANK H. MASON,
Consul.

UNITED STATES CONSULATE,
Marseilles, July 15, 1886.

FISHING AND FISH-CULTURE IN SWITZERLAND.

REPORT BY CONSUL CATLIN, OF ZURICH.

Switzerland, with her many lakes, great and small, her deep water-courses, and her innumerable mountain brooks, possesses unsurpassed attractions, not only for the angler and sportsman, but for the lover of pisciculture as well. That these advantages are appreciated by the Swiss themselves is evidenced by the stringency of the laws pertaining to fishing rights in every canton, and also, especially of late years, to the endeavors, both by legislation and by private enterprises, to protect the fish and develop artificial breeding.

In the feudal times the fishery rights appear to have belonged almost exclusively to the monasteries, and under that *régime* but little attention was given to developing or protecting fishery. The oldest record on this subject which is extant dates back to A. D. 1291, and mentions a certain right to fish at the castle of Wörth, at the Falls of the Rhine. In 1308 the abbot of the All Saints Monastery at Schaffhausen made over to one Conrad Gelser the right to fish in the Rhine from Busingen to Kloster-Mühlen; in 1316 Duke Leopold, of Austria, transferred the lake-fishing at Zug and Aegeri to Ritter Heinrich von Stein for thirty silver marks, and in 1390 Adelheid von Hüneberg sold her rights "on the Lorzen below Kestmer's mill and as far as the lake," for "thirty pounds

of Zurich pennies." As early as 1384 the city of Berne claimed the fishery rights on the lake of Thun, and, from 1411 on, only members of the Fishermen's Guild could engage in fishing at Schaffhausen. In the year 1554 the Zurich council took control of the fishing on the Glatt, and decreed that millers on that stream "must construct sluices to their dams, and furthermore leave the same open, and not fish beyond their dams."

During the fifteenth and sixteenth centuries there were frequent quarrels over fishery rights, and the monasteries were often involved in them; but they were always settled by appeals to courts or councils. In 1784, after a demand from the city of Berne that all fish taken in the Lake of Thun should be brought thither for sale, it was decreed that Berne should have two-thirds and Thun one-third of every catch, with a proviso that 2 per cent. be always reserved for the amtmann, or supervisor.

FISHERY LAWS.

The oldest fishery laws date from 1386 for Schaffhausen and Zurich, 1402 for Basel, and 1458 for Berne. That pertaining to the Greiffensee (Canton Zurich), which was renewed in 1738, says:

According to previous custom, the lake-tax is payable to the landvogt in Greiffensee. All nets and bears (†) are to be taken out of the water at 8 o'clock on Saturday mornings, and not put in again till Monday. Caught fish are to be kept alive in the boat, and, with the exception of those needed by the landvogt, are to be brought to the fish market in Zurich. The nets are not to be over 38 fathoms long; it is forbidden to set out two together; also to use pike-cords. Angling is allowed from the highway and from the public fields. Brachsmen are only to be caught with the consent of the landvogt. During spawning time it is forbidden to set nets at the mouth of any brook, or to fish in the latter. Pike are only to be taken with long lines, "hurlings" not at all, and "egli" not in bears (†). "Pipe-cutting" and "hanfroosen" in the lake are prohibited.

The fishery ordinance of Zurich (1776 and 1809) decrees:

None other than the prescribed implements shall be used in fishing, and no small fish shall be taken. All fish taken are to be brought to the market at Zurich, and the fishing seasons are to be strictly observed. During the long season, i. e., from the middle of April to the end of May, only bluelings are to be taken. Fishing in brooks is prohibited during the spawning season. The taking of hurlings is only permitted on every third morning for four weeks, and rüthel may be taken from autumn to New Year's. For the protection of the spawn, the kraeb (a species of water-plant) is to be left undisturbed in the lake. Only citizens are allowed to fish from the Niklaus-Stud* up to the city; also from the upper mill-race as far as Wipkingen.

I have given these historical extracts as showing that in the past, as to-day, the Swiss people were not insensible to the great natural advantages possessed by their country in this regard. At present each canton has exclusive control over its own fishery rights, and the federal law governing the whole is so simple and complete that I reproduce it here in full:

SWISS FEDERAL LAW IN REGARD TO FISHERIES.

[Translation.]

ARTICLE I. The granting or acknowledgment of fishing rights shall belong to the several cantons. For the exercise of the same the following regulations are prescribed:

ART. II. In fishing it is forbidden to make use of any stationary contrivance, such as fish-weirs, locks, &c., or any stationary nets which obstruct the progress of the fish for more than half the width of the water-course, measured at a right angle from the usual low-water mark. There shall be an interval of at least 10 centimeters (3.93

*A stone pillar at that time standing in the Lake of Zurich.

inches) between each of the stakes used in the weirs for salmon-catching, as well as between the cross-rows of said stakes. In case several such stationary contrivances or stationary nets are up at once on the same or opposite sides of a stream, there shall be a space between each equal to at least double the breadth of the larger.

ART. III. Fishing implements, of whatsoever kind or name, can only be used if the apertures in them, while in the water, are of at least the following depth and breadth, viz:

(a) For catching salmon, woven nets (baskets or bow nets) and drag-nets, 6 centimeters (2.3 inches); inside measurement 4 centimeters (1.5 inches).

(b) For catching other large fish, 3 centimeters (1.18 inch).

(c) For catching smaller fish, 2 centimeters (0.78 inch).

Implements for bait-fishing do not come under these restrictions. On the Rhine, however, from Schaffhausen to Basel, no fishing nets are to be used the apertures of which, measured as above directed, do not equal at least 3 centimeters (1.18 inches) in diameter.

ART. IV. Drag-nets shall not be set and fastened so that they remain lying or hanging.

ART. V. All methods for stunning fish, as well as the use of spring-traps, prongs, "geren," fire-arms, explosive cartridges, dynamite, and other means for wounding them, are forbidden. The use of hooks is permitted, with due regard to legal provisions as to proper seasons. The draining off of water-courses for the purpose of fish-catching is forbidden. In case such draining off becomes necessary for other purposes, timely notice thereof shall be given, if possible, to the owner or lessee of the right to fish therein. Owners of water-works are requested to construct proper contrivances to prevent fish from being drawn into the works. Owners of water-works and irrigating machines are furthermore required, wherever dams and sills are placed in rivers or brooks for the storage of the water, to provide all possible means to facilitate the passage of fish up stream. So-called "automatic fish-catchers" already in operation in connection with mills or other kinds of water-works must be provided with apertures of measurement, corresponding to those previously prescribed for nets. The putting down of new machines of this character is forbidden. The use of iron wheels (?) is forbidden in the rivers from October 20 to December 24.

ART. VI. The following fish shall neither be offered for sale nor sold unless they measure from the eye to the soft part of the tail-fin as follows, respectively, viz:

Salmon, 35 centimeters (13.78 inches); lake trout, 20 centimeters (7.87 inches); brook trout, speckled trout, rüthel, graylings, and all kinds of felchen, 15 centimeters (5.9 inches).

Whenever fish not having these dimensions are taken, they shall be at once restored to the water.

ART. VII. From the 11th of November to the 24th of December salmon-fishing can only be carried on by express consent of the competent cantonal authorities. This permission can only be accorded in cases where the delivery of the propagative elements intended for artificial fish-breeding, viz, spawn and milt, is assured, and it will be revoked in case the fisherman fails to comply strictly with the regulations in such case made and provided.

ART. VIII. The taking, offering for sale, sale, or purchase of lake trout, salmon trout, ground trout, himelanken, ritter, speckled trout or rüthel, and brook trout between the 10th of October and the 20th of January is forbidden. During the period named rafting is prohibited in all rivers and brooks where there is insufficient water to float the larger sizes of logs. Whenever, during the said period, any fish of the kinds named are taken, they shall at once be restored to the water. Permission to take any fish of these kinds for artificial breeding purposes during the proper season may be accorded by the respective cantonal governments; and in cases where the waters form a boundary line, by the same acting in accord with the governments of the adjacent cantons. The offering for sale, sale, and purchase of such fish after their use for impregnating will also be allowed under proper provisions.

ART. IX. The use of all kinds of nets and yarns in the lakes is prohibited from April 15 to the end of May. Angling and the taking of bondellen (?) are not included in this prohibition. As a substitute for the period stated, it is permissible to apply the district system, with a total prohibition against the catching of a single fish for a period of at least one year. The same action may be taken with regard to the fishing season for speckled trout or rüthel. (See Article VIII.)

ART. X. Taking of fish for artificial breeding purposes, and of the smaller fish for feeding those in the breeding establishments, may also be permitted by the cantonal governments during the period stated in Article VIII.

ART. XI. The taking, offering for sale, sale, or purchase of crabs is forbidden from the 1st of September to the 30th of April.

ART. XII. It is forbidden to throw into fishing waters any material calculated to injure or drive away the fish. Refuse of this character from factories or the like is to be led off in such a way as to render it harmless to the fish. Cantonal governments.

and in cases of appeal the federal Government, are to decide whether and to what extent the foregoing regulation applies to systems of farm or industrial drainage already in operation.

ART. XIII. On the demand of the department of the interior, the requisite appropriation will be annually made for overseeing the general carrying out of this law, and also especially for the advancement of artificial fish-breeding, particularly with a view to increasing the stock of salmon and of lake and brook trout. The federal council is authorized to extend temporarily the periods during which fishing, either in all waters or in those of single districts, may be prohibited, whenever these regulations prove inadequate to prevent extermination of the fish. On the same principle, free authority is given to the cantonal authorities to adopt more stringent regulations for the protection of the fish, subject to the federal council's approval.

ART. XIV. Violations of the foregoing regulations are to be punished with fines varying from 3 francs to 400 francs, by the police of the respective cantons, through the judicial authorities, the fines to accrue to the cantons. No fine of less than 50 francs shall be imposed for a violation of the prohibition against steel traps, explosive cartridges, dynamite, or injurious and poisonous substances. The fine may be doubled in case of a repetition of the offense. To the imposition of the fine may be added the withdrawal of the right to fish for a certain period, in cases of repeated offenses, from two to six years, and the confiscation of the unlawful implements and of the fish unlawfully taken. Uncollectible fines are to be commuted by imprisonment, reckoned at the rate of 1 day for every 3 francs.

ART. XV. The federal council is empowered to conclude treaties with neighboring states for policing the fisheries of boundary waters, and in such treaties the provisions of the present law are to be applied as far as possible.

ART. XVI. The federal council is also further empowered to suspend the operation of any of the provisions of the present law in regard to any boundary waters for the use of which for fishing purposes no treaties have yet been concluded.

ART. XVII. The necessary orders for carrying out this law when it goes into effect will be issued by the federal council, and the different cantons are required to make their laws and regulations pertaining to fishery conform to the same without delay.

DISTRIBUTION OF FISHERY RIGHTS.

The aggregate of water-front on lakes, rivers, and brooks available for fishing purposes in Switzerland amounts to 34,036 kilometers, or 21,150 miles. This belongs partly to the Government and partly to townships or to private owners, and is distributed as follows:

Cantons.	Lakes (in kilometers along shores).			Running waters (in kilometers along the banks).					
				Whole width of stream.			Half width of stream.		
	State.	Town-ship.	Pri-vate.	State.	Town-ship.	Pri-vate.	State.	Town-ship.	Pri-vate.
Aargau	17		5	960	55	85	31	37	48
Appenzell (A. R.)				183			23		
Appenzell (I. R.)			5	99			12		
Baselstadt					195	8		14	1
Baselst. d. N.					6	2	1	2	
Berne	115	1	9	3,441	93	630	74		38
Freiburg	34		1	1,863			51		
St. Gallen	50			2,100			71		
Geneve	25				45		20	5	
Glarus	23				542		9		
Graubünden			53	6,386		23	26		
Lucerne	11	43	25	1,633	8	13	11		
Neuchâtel	32			161			28		
Nidwalden	25	8	6	135			5		
Obwalden	29				334				
Schaffhausen				187		2	5	10	
Schwyz	48	8	9	786			19		
Solothurn			1	413	14	1	42		
Tessin	50	14	47	3,306	52	37	6	5	30
Thurgau	45	7	10	79	711			7	3
Uri	23	3			754		9		
Vaud	156			1,819			45		
Valais	19			3,168			28		
Zürich	54	5	30	4,407	60	75	62		
Zug		14	22	199	2	14	32		
Total	756	103	223	30,011	1,241	892	610	80	120

VARIETIES OF FISH FOUND IN SWITZERLAND.

In the Swiss rivers and lakes, including the Rhine skirting the entire northern frontier, there are found in all some forty varieties of fish, which are classified as follows :

CLASS I.—BONE-FISH (*Teleostei*).SUBORDINATE CLASS I.—SHARP-FINS (*Acanthopteri*).A.—Perch family (*Percoidae*).

1. River-perch (*Perca fluviatilis*, Lin.). In all larger rivers and lakes.
2. Stone-perch (*Acerina cernua*, Lin.). Only in the Rhine near Basel.

B.—Family of *Scleroperai*.

3. Bullheads (*Cattus gobio*, Lin.). In all lakes and running waters.

C.—Family of *Scomberoidae*.

4. Stickleback (*Gasterosteus gymmnurus*, Cuv.). In the Rhine near Basel.

D.—Family of *Gobiidae*.

- 4 a. *Gobius fluviatilis*. In Lakes Langen and Lugano.

SUBORDINATE CLASS II.—SOFT-FINS (*Anacanthini*).A.—Shell-fish family (*Gadoidae*).

5. Eel-powt (*Lota vulgaris*, Cuv.). In all lakes and rivers.

SUBORDINATE CLASS III (*Phyostomi*).A.—Shad family (*Siluroidei*).

6. *Silurus glanis*, Lin. In Lakes of Constance, Neuenburg, and Murten, and in the Rhine.

B.—Carp family (*Cyprinoidae*).

7. Carp (*Cyprinus carpio*, Lin.). In the rivers and lakes.
8. Tench (*Tinca vulgaris*, Cuv.). In still and running waters.
9. Barbel (*Barbus fluviatilis*, Agassiz). In the rivers, except in Canton Tessin, where two species closely related to it are found, viz, the *Barbus plebeius* (Val.) and the *Barbus caninus* (Cuvier).
10. Gudgeon (*Gabio fluviatilis*, Cuv.). In the brooks and rivers of Northern Switzerland.
11. Bitterling (*Rhodeus amarus*, Bl.). In the brooks and rivers, though very seldom; most frequently in the Rhine near Basel.
12. Brachsmen (*Abramis brama*, Lin.). In Basel, Thun, and West Switzerland, but lacking in Tessin and Lake Geneva.
13. *Blicca bjorkna*, Lin. In Lakes of Zug and Constance, and at Basel and in West Switzerland; lacking in Tessin.
14. *Alburnus lucidus*, Heck. In Lakes of Zug, Lucerne, and Constance; is lacking in Tessin, but is there replaced by the *Alburnus alborella* of De Filippi.
15. *Spirilinus bipunctatus*, Bl. In West Switzerland, but not in Tessin.
16. *Scardinius erythrophthalmus*, Lin. Found everywhere.
17. *Leuciscus rutilus*, Lin. In the Lake of Constance and in West Switzerland. Two species closely related to it are found in the Tessin lakes, viz, the *Leuciscus pigus* of De Filippi and the *Leuciscus aula* of Bonaparte.
18. *Squalinus cephalus*, Lin. In West Switzerland; lacking in Tessin, but is there replaced by the *Squalinus cavendishii* (Bonap.).
19. *Squalinus leuciscus*, Lin. Found in Western but lacking in Southern Switzerland.

- 20. *Squalinus agassizii*. Found in West Switzerland; lacking in Tessin, but is there replaced by the *Squalinus savignyi* (Bonap.).
- 21. *Phoxinus phoxinus*, Ag. Found everywhere.
- 22. *Chondrostoma toxostoma*, Lin. In West Switzerland; replaced in South Switzerland by the *Chondrostoma toxostoma* of Bonaparte.

C.—Salmon family (*Salmonidae*).

- 23. *Coregonus hoyi*, Fatio. In most of the lakes in the level section of Switzerland.
- 24. *Coregonus hoyi*, Fatio. In Lake of Sempach.
- 25. *Coregonus hoyi*, Fatio. In Lake of Geneva.
- 26. *Coregonus hoyi*, Fatio. Same as 23.
- 27. *Salmo salar*, Lin. In the clear lakes.
- 28. *Trutta salar*, Lin. In large rivers in North Switzerland.
- 29. *Trutta lacustris*, Lin. Found everywhere.
- 30. *Trutta salar*, Lin. Found everywhere.

D.—Pike family (*Esoini*).

- 31. *Esox lucius*, Lin. Everywhere in rivers and lakes.

E.—Herring family (*Clupeidae*).

- 32. *Alosa vulgaris*, Cuv. In the Rhine, around Basel, but only seldom; in Tessin frequently.
- 33. *Alosa fletus*, Cuv. In the Tessin lakes.

F.—Family of *Acanthopages*.

- 34. *Cobitis fossilis*, Lin. Found everywhere.
- 35. *Cobitis barbatula*, Lin. Found everywhere.
- 36. *Cobitis taenia*, Lin. Found everywhere.

G.—Eel family (*Muraenidae*).

- 37. *Anguilla vulgaris*, Flem. In all the larger waters of Switzerland, except in Lake Geneva and the Rhone.

CLASS II.—ROUND-MOUTHS (*Cyclostomi*).

A.—Lamprey family (*Petromyzonini*).

- 38. *Petromyzon marinus*, Lin. Here and there in the Rhine.
- 39. *Petromyzon fluviatilis*, Lin. Here and there in the Rhine.
- 40. *Petromyzon planeri*, Bl. Found everywhere.

ARTIFICIAL FISH-BREEDING.

Great efforts have been made during the past ten years in Switzerland, both by the Government and by private enterprise, to advance the artificial culture of fish. Last year the federal Government distributed the sum of 6,790 francs in prizes to fish-breeders, and the amount thus disbursed since 1880 is 31,806 francs, or over \$6,000. Weekly lectures of two hours' duration are given on the subject of "pisciculture," in the agricultural and forestry department of the federal polytechnic school in this city. Occasionally notices appear in the local papers stating that a consignment of young fish from America or Germany has been let loose in this or that lake or river. The eggs for breeding purposes are mostly imported from the United States or from North Germany, and consist principally of what are known as American white-fish (*Coregonus albula*, *Coregonus maræna*, and *Coregonus albus*), American brook salmon (*Salmo fontinalis*), land-locked salmon (*Salmo salar*), and American rainbow trout (*Salmo irideus*).

FISH-BREEDING ESTABLISHMENTS.

During last year 5,709,432 fish were hatched at the following breeding establishments, viz:

Canton.	Locality.	Proprietor.	Number of fish hatched.	Totals by cantons.
Aargau	Aargau	Herr Schüppli	19,050	
	Attelwell	Herr Hunziker	1,600	
	Bieberstein	Herr Schärer	40,280	
	Brittnau	Walchi and Knuz	35,000	
	Frick	Herr Misch	20,000	
	Lauföhr	Herren Lehner	82,200	
	Suhr	Herr Rüttschl	7,000	
	do.	Herr Schneider	37,000	
	Teufenthal	Karrer Bros.	257,000	
	Uerkheim	Herr Hüsey	40,500	
				539,930
Baselland	Liesthal	Herr Häring	85,200	85,000
Baselstadt	Basel	Herr Lutz	76,000	76,000
Berne	Berne	Herr Mattenhoff	112,650	
	Büren	Herr Burri	120,000	
	Burgdorf	Herr Locker	13,000	
	Brunnatt	Künzli & Guggelmann	50,000	
	Delemont	Herr Enard	170,000	
	Grandval	Herr Roth	20,000	
	Hasle	Herr Rüfenacht	109,000	
	Roches	Herr Widmer	38,000	
	Wohlei	Herr Schütz	3,000	
	Züringen	Herr Anklin	79,000	
	do.	Herr Burger	30,000	
				735,650
St. Galle	Sennwald	Herr Goldy	2,100	
	Steinthal	Herr Schweizer	30,300	
				33,400
Geneva	Geneva	Government	315,800	315,900
Glarus	Mollis	Herr Schmid	36,000	36,000
Graubünden	Arosa	Herr Wieland	18,500	18,500
Lucerne	Lucerne	Corporation	191,000	
	Perlen	Herr Widmer	48,000	
	St. Urban	Herr Schnider	22,000	
				261,000
Nidwalden	Staus	Herr Kaiser	14,000	14,000
Schaffhausen	Wörth	Government	473,900	473,900
Schwyz	Arth	Herr Weber	50,000	50,000
Solothurn	Kriegstetten	Fishery Company	27,000	
	Solothurn	do.	106,500	
				133,500
Thurgau	Bischoffzell	Government	46,820	
	Junkholz	do.	32,500	
	Münchweilen	do.	33,672	
				112,492
Waadt	Bonvillau	Government	180,000	
	Charles	M. de Lüs	20,000	
	Chéni	Valley Fishery Company	101,200	
	La Dernier	M. Giarow	50,000	
	Grand Bois	M. Baum	76,000	
	Isle	Fishery Company	44,500	
	Vallorbes	M. Chaulmontet	5,000	
	do.	Township	74,000	
				550,700
Zurich	Dachsen	Government	683,000	
	Glattfelden	do.	215,000	
	Mellen	Herr Wunderli	6,000	
	Sihlwald	Government	38,500	
	Zurich	Herr Erpf	12,000	
	do.	Government	454,700	
				1,410,200
Zug	Hauptsee	Herren Merz	62,000	
	Walchwil	Herr Hürlimann	50,000	
	Zug	Residents Association	750,700	
				862,700
Total hatched in 1885				5,709,432

The above product was distributed as to kinds as follows:

Trout	2,705,526
Salmon	991,050
Röthel	710,650

Whitefish	559,000
Bastard-salmon	460,266
Graylings	189,240
Suisse felchen	81,700
Madu marine	9,000
Brook salmon	3,000
Total	5,709,432

PROTECTION FOR FISH.

But if the friends of the fish are active, so also are their enemies, and in these latter Switzerland abounds. Chief among them may be mentioned the fish-otter, fox, pole-cat, herons, cormorants, gulls, eagles, kites, ducks, geese, divers, shrews, and water-rats; and against these, one and all, the friends of fish have declared relentless warfare. The depredations of the fish-otter, in particular, are so destructive and widespread that the Diana Hunting Association, an organization existing throughout Switzerland, with headquarters at Berne, has a contract with a firm named Baur Brothers, at Aarburg, for supplying packs of trained otter-dogs on the demand of fishery owners in any part of the country. Yet, even with the most strenuous efforts for their extermination, the fishes' foes, both in water and air, continue to increase and multiply, and the endless struggle of nature for the survival of the fittest goes on, notwithstanding all of man's interference.

Another cause retarding the development of natural growth of fish is found in the fluctuations in the depth of water in brooks and rivers, caused in many cases by the diversion of the supply into factory races, &c. To obviate this as far as possible, the Federal council is empowered to bear one-third of the expense in providing in any running water permanent free channels for the passage of fish. Under this provision five channels have been constructed, viz, in the the Saaue at Freiburg (hewn out of sandstone), in the Birs near Basel (cement), in the Reuss at Lucerne (wood), in the Lorz at Cham, and in the Limmat at Baden.

As other causes operating prejudicially to the natural increase of the fish supply, and which Swiss legislation is endeavoring to prevent or remove, may be enumerated: (1) The destruction of reeds and water-plants; (2) changes in the shore-front of brooks and rivers; (3) destruction of the bushes along the same, and (4) the dissimilar treatment of the migratory fish in different localities. These are evils which only time and a thorough system of fishery police can remove. The Swiss Government, there is reason to believe, is fully alive to its duties in this regard, and has already done much to bring the entire question of fish-protection into a proper and advantageous form. Treaties exist with Baden, Alsace-Lorraine, France, and Italy, for the proper policing of the frontier waters. Besides this, a system of twelve reserve districts, in which fishing may be prohibited for a fixed period, has been organized. These districts cover a total area of 4,753 square acres, and are principally located in Cantons Berne, Graubünden, and Zug, with small reserves also in Glarus and Zurich. The largest of these, with an area of 1,500 square acres, includes all the waters of the Engardine, from Tarasp to the point where the river Inn emerges from the Silser See.

The Swiss fishery interests furnish employment to 974 persons.

Statistics place the total value of fish caught in Switzerland last year at 709,000 francs, of which 90,000 was from salmon fisheries, 220,000 from other river fisheries, and 309,000 from lake fisheries.

It is estimated by the Swiss hotel-keepers that they pay annually 1,200,000 francs for fresh fish supplied from foreign lands. They import turbot, sole, and pike from Hamburg, and oysters from Ostend.

The total imports of last year (1885) into Switzerland amounted to 20,657 quintals (hundred centners) of fish, of which 15,809 quintals were fresh.

The exports for the same year only amounted to 356 quintals.

GEORGE L. CATLIN,
Consul.

UNITED STATES CONSULATE,
Zurich, May 19, 1886.

THE LUMBER INDUSTRY OF CANADA.

REPORT OF COMMERCIAL AGENT HOTCHKISS, OF OTTAWA.

To successfully engage in the manufacture of lumber on any extended scale, it is obviously necessary that we must first possess or control the requisite timber. A copy of the provincial laws and regulations governing the disposal of the timber rights or limits will not only be interesting, but of practical value to many, as not a few Americans are now holders of large bodies of standing timber in the Provinces of Quebec and Ontario, while the attention of many American lumbermen is being rapidly drawn toward the possession of it, as they so distinctly recognize the effects of the rapid diminution of the timber in the States.

I will, however, introduce the laws and regulations in force in the Province of Quebec only (from which source the supply is obtained for the mills at this point), merely remarking in regard to Ontario that, while the same general rules and regulations prevail as to licenses, the rate of taxation (not the mode) on the produce is materially different. This will be shown hereafter, in contrast, in the same table with the Province of Quebec.

As a partial abstract of the provincial laws and regulations would avail little, and given in full consume much space, I enter without comment on this part of the subject of the lumber industry, leaving it for the practical lumbermen in the United States to draw their own conclusions as to the more simple method adopted by the United States Government in the manner of the disposal of their public lands, and especially of their complete disentanglement subsequent to disposal.

CONDITIONS OF DISPOSING OF TIMBER LANDS.

Going to the fountain head or proprietary condition of the "woods and forests," we find it in the provincial governments (not to be confounded with the Dominion Government), each of which has enacted general laws and regulations governing the disposition of the same, chiefly as follows:

The disposal of the "woods and forests" is made by public auction, at such times and places as may be decided by the bureau of crown lands department to be most desirable. Public notice is given by advertisement, with proper description of the limits or berths to be disposed of. A minimum price is stated, terms are cash, and the highest bidder of bonus over the minimum becomes the purchaser.

The buyer receives his title in the form of a license for that certain territory, termed "berths" or "limits," each berth or limit being usually one square mile area (or 640 acres). This license in no wise conveys rights in fee to the land, but simply the right and privilege to cut the timber thereon for the term of one year, with the priority of right to renewal yearly, but only according to established regulations enacted therefor. The main feature of these regulations is a yearly tax of \$2 per square mile, to be paid within a specified time by the *bona-fide* holder of the license, who can then procure an extension of this license for one year, and so likewise from year to year.

EXISTING LAWS AND REGULATIONS.

For the various other subsequent modes of taxation by which the holding or utilizing of the timber is a source of expense to the owner, or is made a source of revenue to the government, I will now refer directly to the "laws and regulations of the crown lands department," now in force.

Revised regulations, department of crown lands (woods and forests), Province of Quebec, November, 1880.

[Revised regulations respecting the sale and management of timber on crown lands, made and approved at various dates, under authority of chapter 23 of the Consolidated Statutes of Canada, by his honor the lieutenant-governor in council, and now in force.]

FORM OF LICENSE.

I do hereby give unto ——— and unto ———, agents and workmen, full power and license to cut timber and saw logs upon the location described on the back hereof (on the back of license is given the full description of the limit boundaries), and to hold and occupy the said location to the exclusion of all others, except as hereinafter mentioned, from ——— to the 30th day of April, 18—, with the right of conveying away the said timber ——— through or over any ungranted or waste lands of the crown.

And by virtue of this license the said licentiate has a right by said provincial statute to all timber cut by others during the term of this license in trespass on the ground hereby assigned, with full power to seize and recover the same anywhere within the Dominion of Canada.

But this license is subject to the following conditions, viz:

That any person or persons may at all times make and use roads upon and travel over the ground hereby licensed, and cut and take therefrom any trees under (10) ten inches in the largest part in thickness, necessary to make floats, traverses, oars, or wythes for his or their use in rafting timber or saw-logs cut in the Province of Quebec, and being rafted in the immediate vicinity of the cutting of such rafting stuff.

That nothing herein shall prevent any person or persons authorized to that effect by the commissioner of crown lands of this province from taking any standing timber of any kind to be used for the making of roads or bridges or for public works.

That all lots sold or located by the authority of the commissioner of crown lands prior to the date hereof are to be held as excepted from this license, and lots so sold or located subsequently shall cease to be subject to it after the (30th) thirtieth of April following; and whenever the sales of any such lots shall be canceled the said lots shall be restored to this license.

And that persons settling under lawful authority or title within the location hereby licensed shall not in any way be interrupted in clearing or in cultivation by the said licentiate, or any one acting under him, or by his permission.

And further, under condition that the said licentiate or his representatives shall comply with all regulations that are or may be established by order in council, and shall submit all the timber cut under this license to be counted or measured, and settle for the dues chargeable thereon, when required by any officer thereunto authorized, otherwise the said timber will be forfeited to the crown, and the licentiate be subject to such other penalties as the act provides.

Given under my hand at ——— this ——— day of ———, 18—, in duplicate.

(Ground rent payable yearly, \$2 per square mile.)

Crown Timber Agent.

The above named licentiate shall be bound, on paying the ground rent for the renewal hereof, to declare upon oath whether he is still the bona fide proprietor of the limit hereby licensed or whether he has sold or transferred it or any part of it, or for whom he holds it.

TRANSFERS.

All limit owners are to notify the agents of any transfer which they may have effected as soon as any transaction of the kind may have taken place, and should they fail to give due notification to the agent the commissioner of crown lands may rule the forfeiture of such license or licenses comprising the limit or limits so transferred.

Limit holders, in order to enable them to obtain advances necessary for their operations, shall have a right to pledge their limits as security without a bonus becoming payable. Such pledge, in order to effect the limit against the debtor, shall require to be noted on the back of the license by an authorized officer of the department of crown lands. But if the party giving such pledge should fail to perform his obligation towards his creditors, the latter, on establishing the fact to the satisfaction of the commissioner, may obtain the next renewal in his or their own name, subject to the payment of the "transfer bonus" (\$1 per square mile), the transfer then being deemed complete.

All transfers of timber berths to be in writing, and if not found objectionable by the crown land department, or agent named for the issue of licenses, to be valid from the date on which they may be deposited in the hands of the latter; but no transfer to be accepted while the party transferring is in default for non-payment of dues on timber to the crown.*

All timber licenses are to expire on the 30th of April following the date of their issue, and are renewable on the 1st day of May to the 5th day of December of the same year.

In cases of total or partial loss in value of a limit, whether by fire, by the extending of settlement, or other causes, the commissioner of crown lands shall have the discretionary power of annulling the license in whole or in part. He shall also have the discretionary power of refusing to renew any license in case of the contravention of the regulations.

License holders who shall have duly complied with the present regulations, or which may be hereafter sanctioned by his honor the lieutenant-governor in council, shall be entitled to renewals of their licenses, provided they shall have made and delivered to the crown timber agent of the locality before the 30th day of September or such prior date, in any locality as the commissioner of crown lands may fix, sworn statements of the number and description of pieces of timber and saw-logs, cut by themselves or others to their knowledge, upon each of the berths held by them during the previous season; and shall have paid on or before the 30th November the dues chargeable thereon (see table of timber dues); and shall also have paid to the crown, on or before the 5th day of December following, the ground rent payable for renewal of their licenses for the ensuing season, together with any transfer bonus, should any transfer have taken place; but should they fail to comply with these conditions in respect to any berths held by them, such berths shall thereby become vacant, and the right to license therefor be forfeited, and they shall be sold at public auction: excepting that if double the ground rent be paid for omitting to furnish the statement above mentioned, and payment be made before the day of sale, with 10 per cent. per annum for the delay in payment, the berth may be relicensed to the former holder.

On all mineral lands sold or patented after the 1st day of February, 1874, comprised within the territory now under license, limit holders may, in virtue of said licenses, retain the privilege of cutting the merchantable pine and spruce timber growing thereon; but these permits shall finally expire after a period of three years from the date of issue of letters patent for such lands.

TARIFF OF TIMBER DUES.

The following table is an exhibit of the "crown timber-dues," to which all timber cut under license, and the regulations therefor, is subject, and these dues are additional to cost of license, the "yearly ground

*The transfer bonus in 1863 was by order in council made \$8 per square mile. In 1877 this, by like order, was reduced to \$4. In November, 1880, this tax was again reduced to \$1, which law is now in force.

rent" (\$2 per square mile), and "transfer bonus" (\$1 per square mile).

All timber cut under license to be subject to the following tariff of dues, viz :

Description.	Quebec.	Ontario.
Oak and walnut, per cubic foot.....	4 cents.	3 cents.
Maple, elm, ash, tamarac.....		2 cents.
Red and white pine, birch, basswood, cedar, and other square timber, per cubic foot.....	2 cents.	1½ cents.
Pine logs, 13½ feet long, measuring 17 inches in least diameter, including culls, each.....	22 cents.	15 cents.
Pine logs, 13½ feet long, less than 17 inches, including culls, each.....	11 cents.	15 cents.
Spruce logs, 13½ feet long, each.....	5½ cents.	10 cents.
Staves, "pipe," per 1,000.....	\$7.	\$7.
Staves, "West Indies".....	\$2.25.	\$2.25.
Cord-wood (hard), per cord, 128 feet.....	16 cents.	20 cents.
Cord-wood (soft), per cord, 128 feet.....	8 cents.	12½ cents.
Cedar rails, 10 to 12 feet long, per 100.....	25 cents.	1 cent.
Cedar pickets, per 100.....	15 cents.	1 cent.
Cedar or pine shingles, short, per 1,000.....	8 cents.	1 cent.
Cedar or pine shingles, long, per 1,000.....	15 cents.	1 cent.
Cedar telegraph poles, each.....	6 cents.	1 cent.
Cedar fence-posts, per foot in length.....	½ cent.	1 cent.
Cedar poles for block-fence, each.....	½ cent.	1 cent.
Cedar hop-poles, per 100.....	20 cents.	1 cent.
Rails other than cedar, per 100.....	10 cents.	1 cent.
Pickets other than cedar, per 100.....	5 cents.	1 cent.
Railway ties of any timber, each.....	2 cents.	15 per cent. ad valorem.
Hemlock lath-wood, per cord.....	15 cents.	1 cent.
Hemlock bark, per cord.....	32 cents.	30 cents.
Hemlock logs, 13½ feet in length, each.....	6 cents.	10 cents.
Balsam logs, 13½ feet in length, each.....	5 cents.	10 cents.
Hardwood logs and tamarac, round.....	22 cents.	25 cents.
Floors of birch (28 feet long), each.....	25 to 30 cents.	1 cent per cubic foot.
Knees, according to size, each.....	5 to 25 cents.	15 per cent. ad valorem.
Futtocks, according to size, each.....	10 to 35 cents.	10 cents.
Cedar for shingles, per cord of 128 feet.....	16 cents.	12½ cents.
Pine for shingles, per cord of 128 feet.....	20 cents.	12½ cents.
Boom timber, round or sided, spruce, per lineal foot.....	½ cent.	1½ cents per cubic foot.
Boom timber, round or sided, pine or tamarac, per lineal foot.....	1 cent.	1½ cents per cubic foot.
Small round spruce spars, under 10 inches, per lineal foot.....	½ cent.	
Small round tamarac or pine spars, under 10 inches, per lineal foot.....	½ cent.	
White birch, per cord.....	30 cents.	

Additional Dominion customs export duties.

White and Norway pine saw-logs, per 1,000 feet, board measure.....	\$2 00
Spruce and hemlock saw-logs, per 1,000 feet, board measure.....	1 00
Shingle-bolts, per cord of 128 feet.....	1 50

Provided that the powers vested in the governor-general by act 42 Vic., cap. 15, sec. 6, shall be extended to and apply in all respects to the above-mentioned logs, and the governor in council may increase the duty on pine logs to \$3 per 1,000 feet, board measure.

CUSTOMS TARIFF ON TIMBER.

Trusting it may serve a good purpose to manufacturers or others, I append the Dominion customs tariff on imports of "wood and wooden wares."

Tariff of Canadian import duties on wood and wooden wares.

Articles.	Rates.
Bagatelle tables or boards, with cues and balls.....	* 35 per cent. ad valorem.
Billiard tables, without pockets, 4 feet 6 inches by 9 feet or under, specific, each.....	* \$22.50.
Billiard tables of over 4 feet 6 inches by 9 feet, each.....	* \$25.
Billiard tables, with pockets, 5 feet 6 inches by 11 feet or under.....	* \$35.
Billiard tables, on all over 5 feet 6 inches by 11 feet.....	* \$40.
Cane or rattan, split or otherwise manufactured.....	25 per cent.
Cork or manufactures of corkwood or bark.....	20 per cent.
Excelsior for upholsterers' use.....	20 per cent.
Fishing-rods.....	30 per cent.
Furniture of any material, house or office, caskets and coffins of any material.....	35 per cent.
Show-cases, \$2 each and 35 per cent. ad valorem.....	\$2, and 35 per cent. ad valorem.
Shingles.....	20 per cent. ad valorem.
Wood and manufactures of wooden ware, viz, pails, tubs, churns, brooms, brushes, and other manufactures of wood not elsewhere specified.....	25 per cent. ad valorem.
Hubs, spokes, felloes, and parts of wheels rough hewn and sawed only.....	15 per cent. ad valorem.
Moldings of wood, plain.....	25 per cent. ad valorem.
Moldings of wood, gilded or otherwise further manufactured than plain.....	30 per cent. ad valorem.
Picture frames as furniture.....	35 per cent. ad valorem.
Lumber and timber not elsewhere specified.....	20 per cent. ad valorem.
Petroleum barrels, filled or empty.....	40 cents each.
Pork barrels, filled or empty.....	100 cents each.

*And in addition thereto 15 per cent. ad valorem, each table to include 12 cues, one set four balls, with markers, cloths, and cases, but no pool balls.

ON FREE LIST.

Lumber and timber, and plank, and boards sawn, of lignum-vitæ, box-wood, cherry, walnut, chestnut, gum-wood, red cedar, mahogany, pitch pine, rose-wood, sandal-wood, satin-wood, Spanish cedar, oak, hickory and white-wood, not shaped, planed, or otherwise manufactured, and sawdust of the same (provided that hickory lumber may be sawed to shape for spokes of wheels and for handles for tools, but not further manufactured), broom-corn, oak bark. Forest trees for planting, and wood for fuel, in Manitoba and Northwest Territories, and willow for basket-makers, are free of import duty.

FURTHER REGULATIONS GOVERNING CROWN TIMBER DUES.

And when any license holder is in default for or evading the dues to the Crown, on any part of his timber, they may be levied on any other timber of his cut under license, together with the dues thereon. Provided, however, that all timber made under licenses issued for the year 1879-'80 (expired 30th April, 1880) be subject to the tariff of 17th February, 1874.

All square timber, logs, deals, boards, or other stuff leaving the agency in which it has been cut, in any form, must be submitted to counting or actual measurement, and statements under oath must be furnished by the license holder as to the quantity of timber and logs cut under license, including culls. Owners or lessees of saw-mills, cutting under license, must show by such sworn statements the total number of each kind and length of logs cut or acquired by them and taken to their mills, including culls, or where left each season, giving the number in standards * also, and show by satisfactory affidavits the lots on which the said timber has been cut, and how many on each lot, distinguishing the timber cut on private lands from that cut on Crown domain, clearances to be refused on non-compliance.

Before moving any raft or parcel of timber, lumber, or saw-logs from the agency in which it has been cut, the owner or person in charge thereof shall make report to the Crown timber agent, if required on oath, as to the number of pieces cut of each kind of wood, and the number of cribs; and to exempt any cut on private lands from Crown timber dues, must furnish affidavit stating what lots it was cut upon, and how much on each lot. Whereupon he shall obtain a permit to remove, &c. On the arrival of such raft or parcel at Quebec or intermediate place for sale or shipment, the owner shall make report to collector of Crown timber dues, or the supervisor of cutters

* A "standard" log is 13½ feet long and 17 inches diameter, equal to 200 feet, board measure.

&c., within forty-eight hours, who, on examination, shall be satisfied that all Crown dues have been duly paid.

Persons evading, refusing, or in default for the payment of timber dues, or taking violent possession of disputed ground without obtaining decision in their favor, or refusing to comply with a decision or with regulations established, or who shall forcibly interrupt surveyors, shall be refused further licenses, and their berths become disposable to others on the expiration of their licenses.

REMARKS ON THE REGULATIONS.

While the main features of the system adopted by the provincial governments for license and of the regulations governing the minutiae of the system have been stated, many of the minor points have been omitted, as being only of special significance to the actual operator.

To the practical lumbermen of the United States, owning in fee their timber, all this required formality and espionage will certainly appear most obnoxious, if not semi-prohibitory; but, nevertheless, the time is present when vast tracts of Canadian timber are held under this form of license by enterprising Americans, while others, having mills on the shores of Lakes Michigan and Huron, who have exhausted the timber which has heretofore been their source of supply, are constantly looking to this source, not only for immediate but for permanent dependence.

This growing necessity is well understood by the Canadian authorities, and in view of which they have just laid the new and enormously increased duty upon the exportation of saw-logs—an increase from \$1 to virtually \$3 per thousand feet, board measure, on pine.

While the present published increase is only to \$2, it may be considered as merely nominal, for by the discretionary power vested in the governor-general it is evidently intended that when this character of export becomes developed to a degree of importance the tariff rate of \$3 shall be made operative, and thereby, as is supposed, prohibitory.

Those Americans who are now engaged in taking pine logs to the other side will be subject to pay the tariff of \$2, which is equal to the duty on the lumber had it been manufactured in Canada, but any important continuance of the traffic in logs will surely be met by the "provided" increase to \$3.

It is an indisputable fact that this tariff will also be further increased, if it shall become necessary to find the prohibitory point. For, while the Government raises no objections to Americans owning the timber, it is fixed in its determination that the Dominion shall have the resultant benefits arising from the manufacture.

LUMBER INDUSTRY OF CANADA.

The manner of prosecuting the lumber industry in Canada does not materially differ from that pursued in the United States. Indeed, many of the heaviest and shrewdest operators in the Provinces are Americans, no small number of whom have become very wealthy and fill positions which reflect honor upon the country of their birth as well as that of their adoption.

As an illustration of the enormous amount of capital required to prosecute a large lumbering business in Canada, I will briefly approximate the items, say for an operation requiring thirty to forty million feet for a season's sawing.

This quantity is about the average cutting capacity of the twenty or more mills in this district.

Going to the forest we find about 300 men and 75 span of horses,

oxen, and mules. All of these, from the nature of the service, must be well fed.

Looking into the commissary department, we will find needful supplies about as follows: Flour, 1,500 barrels; pork, 1,000 barrels; beans, 500 bushels; potatoes, 1,500 bushels; tea, 100 chests; coffee (not used); pressed hay, 300 tons; oats, 5,000 bushels.

From time to time ten or fifteen head of cattle will be driven in for slaughter, for fresh animal food must be sanitarily provided during the five to six months' residence in camp.

Thus a small army of men and animals are entirely dependent upon every move of the principal, and cash alone is king in this business.

The houses and barns are usually built of logs in the ordinary fashion, and are of necessity made very close, warm, and comfortable, for the rigor of the climate admits of no default in this respect, and every interest of the employer demands it, where good service of men or animals is expected and required.

LABOR IN THE INDUSTRY.

Large numbers of these men have no other means of livelihood than this of lumbering. They go into the woods in the fall, after the closing of the mills, and remain until the breaking up of the streams in the spring, when the logs which they have placed on the ice and river banks in the interim are started on their journey to the holding-grounds or "booms" below (often a journey of several hundred miles), they being carried onward by the current and followed by the men in gangs, with boats and teams, who break the jams, clear the riffes and islands, and replace the lodged logs in the current. Having secured the logs in the booms their labor is then turned to the mills, to engage in the manufacture of the lumber.

The teams and teamsters, having been chiefly drawn from the agricultural class, have returned to their respective homes, both men and animals in good condition for their farming pursuits, being greatly benefited by steady and congenial labor through the long and dreary winter.

A hardier and healthier class of humanity can scarcely be found on the American continent. Steady work and hard knocks are their delight. I am told that over 20,000 of this hardy class of Canada's population were among the volunteers in the Union Army during the late civil war, and hundreds of them, or their widows, are now recipients of the generous pensions which the United States Government is so lavishly dispensing to its brave defenders.

MANUFACTURING STOCK.

Having placed the logs in the "boom" the assorters now distribute to each mill-owner the logs which bear his private mark, these marks having been previously registered with the "boom company," as well as in the "crown land-office."

The logs are cut 13 feet 6 inches and 16 feet 6 inches in length, as in running the riffes and rapids the ends get broomed, while the ends of the manufactured lumber must be smooth and square. This condition is attained by passing all lumber, after sawing, over a butting-table, bringing it to the even 13 and 16 feet, and leaving it square and shapely. No lumber is made in this section which is not thus treated.

The usual custom of manufacturing the stock in this section of Canada is to first assort the cream of the stock, which is cut into "deals"

for the English market. Deals are 3 inches thick, any length 10 feet and upward, and any width 9 inches and upward. These are assorted into firsts, seconds, thirds, and fourths (each bearing its respective market value), and these grades only are exported, leaving always in the mill-yards a large amount of very inferior stock to be disposed of as may be. The balance of the logs are sawed into 10, 12, and 14 inch "stocks," which are largely exported to the United States, the English and other foreign markets requiring them only to a comparatively limited extent. These "stocks" are usually piled "log run," with "mill culls" only taken out, when the character of the logs or lumber therefrom will warrant this course, which is ordinarily the case; but when not of sufficiently good character, then the next grade, or "shipping culls" are also piled separately. It is the intention of manufacturers, by the general system of assorting, to be able to supply any grade of quality in all the variety of thicknesses commonly desired, the only arbitrary condition being in the lengths as before stated. A specially notable fact is the liberal thickness which characterizes Canadian-made lumber, the principal portion of which is "one-eighth large." No "full size" of log lumber, as of old, is manufactured, but the mills being all "gang" the standard sizes of "stocks" are rigidly adhered to, and even the assorting of the "sidings" is subjected to the same general principles in the matter of qualities and widths. A separate assorting is, however, made of the "shorts" in the sidings. From these the culls of all grades are separated, and the "cut-offs" from the butting-tables, when under 10 feet in length, are piled with the "shorts."

The care given to piling (a too-often neglected feature with the green lumber by the manufacturer) is fully up to the standard of the United States millmen. It is in square blocks, single courses, two crossings, with lengths and sizes separate as noted, and very open.

PINE TIMBER.

The character of the pine is similar in texture and quality to the present production of Michigan and Wisconsin, and will in no wise compare favorably with what it has been in the past, which is as equally applicable to the pine of the two States named. Indeed, all lumbermen of many years' experience have recognized the rapid downward scale of the quality of the lumber production of this continent.

While the improvements in its manufacture have been marked, and have to a degree greatly assisted to conceal many glaring defects, it is beyond the ability of man to redeem the fast depreciating standard of quality. The writer vividly recalls to memory the large old primeval "cork" and "sugar" pines of thirty years ago in both Canada and Michigan, as well as Pennsylvania and Western New York, which produced 25 to 50 per cent. of "three uppers," and mostly of "first clear," for which the manufacturer then realized about \$10 per thousand feet, while to-day the manufacturer gets \$9 for his "shipping culls," or lowest commercial grade.

The standing pine in Canada, judging from the appearance of the logs, is "grove" and "bull saps." The knot is inclined too generally to be "ring" and "black," and a fine, insidious "shake" appears to permeate the timber, developed by the usual water-streaks when sawing, and still more so after drying.

The size of the timber may be indicated by the size of the logs, which will run about five to seven to the thousand feet. "Ring-rot" is very prevalent, sufficiently so to be a marked feature. The "run to clear" is nominal; the average is not over 5 per cent., with the usual exceptional

lots and belts of better pine and quality. The average run to "culls" may be safely placed at 25 per cent.

Much of the pine now being lumbered is timber which has been once condemned, or has been selected heretofore, and the choice timber taken out for hewing into "board timber" for the English market.

CANADIAN SAW-MILLS.

The mills in this district being generally of large capacity are equipped of necessity with all the modern saw-mill appliances for rapid, smooth, and economical work. They are all "gang," and contain from four to eight gangs of thirty-six to forty-two saws each, with all the requisite edging-tables, all lumber being made parallel and passed over chain butting-tables.

The manufacturers are fully alive to the importance of keeping abreast of the times and the necessities of the industry. The mills are run night and day through the short season of not over seven months. They are very generally lighted by the electric system, an indispensable adjunct to night work at sawing.

The mills at Ottawa, which produce two-thirds of the lumber manufactured in this district, are operated by water-power, made available by harnessing the Chaudière Falls, which are contiguous to the city limits and a barrier to continued navigation of the Ottawa River. This power is controlled by the Dominion Government, at the expense of which it has been made available, and its utilization allowed at a mere nominal cost. It is apparently limitless in its power, but so seriously circumscribed by want of proper land room that its great possibilities cannot be fully realized. The city of Ottawa utilizes this power to operate its electric light system, which is made general throughout the city at a minimum of expense.

Much of the machinery used in the saw-mills is obtained in the United States, that of home production being deferred to when equal to the necessities for which required. That of American production, however, largely predominates.

WAGES OF LABOR.

Eleven hours constitute a day's work by mill hands and others connected with the manufacture and care of the lumber. Wages are paid weekly to mill hands, and while in the forests as the necessities of the laborers may require it.

Any statement regarding rates paid in this field of labor must necessarily be approximative, and are thus as follows, per month, all with board, viz:

Foremen in woods	\$40	to	\$60
Choppers and skidders	15	to	20
Road-cutters	12	to	15
Teamsters and loaders	16	to	18
Cooks	30	to	40
Log-measurers			50
Horse or mule team, with teamster	35	to	40

Wages in and around the mills are invariably without board.

Foremen			100
Head sawyer for gangs	40	to	45
Head sawyer for circulars			60
Tail sawyer	30	to	35
Edgers and trimmers	35	to	40
Filers	50	to	60
General help, teamsters and pilers	30	to	35

Lath are usually manufactured by the one thousand pieces, at about 40 cents, all furnished.

All lumber is teamed from the saws to the piling grounds, and thence again teamed after drying to the point of delivery, whether it be by water or by rail. The nature of the relative location of the mills (which, being run by water, is arbitrary) and piling grounds with the delivery points, either by water or rail, debars the manufacturers at this point the advantages to be derived from the natural or artificial means of disposing of the lumber more direct from the saws, which are employed by the manufacturers of Michigan; and which entails an extra cost of 50 to 75 cents per 1,000 feet.

LATH, SHINGLES, AND WASTE.

The usual amount of lath and pickets which characterizes the output of this class of mills is produced, and of unexceptionable quality. The lath are, however, almost invariably made one and three-eighths wide, instead of the standard United States width of one and one-half.

No shingles are manufactured at this point worthy of mention, either for quantity or quality, and I am unable to state where in the Dominion of Canada any extensive manufacture of shingles is prosecuted; indeed, notwithstanding the excellence which the manufacture of sawed lumber has attained, I doubt if any well-made and properly assorted shingles are produced.

Until Canadians learn that shingles made "bastard" are neither first, second, nor third qualities, but culls only, and that no matter how perfect in quality they may be, the lowest possible grade will be only accorded them in the United States markets, the fewer they make the better for all parties.

The waste of lumber, or that which is permitted to go into the offals, which should be more closely utilized, is the subject of general criticism and seems almost criminal; but, for the want of the means, through the lack of other industrial enterprises, it is converted into fuel. Here is surely an opening for an enterprising mechanic to build up a fine paying business by cutting up this valuable waste into the thousand articles wanted in the United States, and for which a certain demand exists. I will simply suggest its perfect adaptability to making hat, shoe, starch, soap, and packing boxes generally. It is sold for fuel at 10 cents per wagon load.

TRANSPORTATION FACILITIES.

The facilities for transportation are superior, being barges and canal-boats on the Ottawa River to Montreal, and Rouse's Point, N. Y., at the latter place connecting with the New York State canals, also by the Rideau Canal, commencing at this point, to Kingston, and thence by lake to all points.

The Canadian Pacific and Canada Atlantic Railways transport immense amounts of lumber hence both summer and winter, the convenience of the lumbermen in the matter of trackage as well as the character of the cars suitable to this traffic having been primarily consulted.

PRODUCTION.

The entire output of sawed lumber trade at this point may be estimated at 400,000,000, and the district at 700,000,000 feet. It is all white pine except the usual small percentage of "red pine," which is the "Norway pine" of the United States.

The average quality of the "red pine" is fully equal to that of the United States. It is of equally slow sale, its inadaptability to building uses being fully recognized, especially its worthlessness for raw flooring.

Very little hemlock, owing to its inferior quality, is sawed into lumber, even for domestic uses, though it abounds in large quantities. The bark only is considered of any commercial value, and this to quite an extent when near to shipping points is exported to the near Eastern States.

White cedar and tamarack abound in Canada, being generally distributed throughout the Dominion. They are both very durable woods, and are largely utilized for telegraph poles and railroad ties, many going to the States for these purposes.

In this section of Canada there is very little found of those valuable hardwoods which in past years have been so plentiful and of such excellent quality in the more western portion of Canada (notably in that section of Ontario west of the Niagara River), and it would appear that the oak, black walnut, sycamore, hickory, and butternut were not indigenous to this more northern latitude.

AMOUNT OF STANDING TIMBER.

The practical lumberman will naturally attach much importance to the neglected question of quantity of standing pine timber remaining available for lumber. I scarcely need say that any estimate which I might advance would be so problematical, so totally unreliable as to be presumptuous. There are no means at the command of the Government or of individuals by which this has been or can be ascertained with any degree of reliability. A few years since an estimate was, however, given to the public by an enterprising statistician at 130,000,000,000. As the Government still holds vast tracts of land which have never been visited by a surveyor, the fallacy of such an estimate or any estimate will be apparent.

EXPORTS AND TARIFF.

That a realizing sense of the rapidity with which the forests are being denuded of timber, also of the commercial importance of this industry, may be obtained, I append a summary of the exports of "the products of the forest" of Canada for three years, to which must be added the consumption of the Dominion, which cannot be even approximated with any degree of correctness. In this table square timber, which is sold by the English rule in "tons" (50 cubic feet), has been brought to board measure, and deals, which by English rule are sold by "standard hundreds" (2,750 feet), are also shown in board measure, this being the only rule or measure for lumber which the United States system comprehends.

To ascertain the amount of sawed pine lumber entered in the United States for actual consumption an allowance of at least 5 per cent. should be made from the figures representing that article for the amount going into the United States in bond for export (merely passing through).

The outlook for business the present season was of the most flattering character, and more lumber was sold between the 1st of January and the 1st of April for the United States market than had ever been sold in the same time in the history of the lumber industry of Canada.

The prospect of the passage of the "Morrison tariff bill" was consid-

ered good; indeed so favorable that the purchase of lumber in large blocks was the result. One house in the States purchased 80,000,000.

The failure of this bill, which was to admit lumber into the United States free of duty, and which it was calculated would have the effect to materially enhance the value of lumber in the Dominion, coupled with the effect of the spring labor troubles in the United States, has worked annihilation to the early boom in sales, and the market has receded to its normal condition of steady and healthy quietude. Prices are fully equal to those of last season, and the usual volume of lumber is moving, peculiar to the dullness of midsummer. Lumber in this district is held in strong hands, and no industry in Canada is in better condition to stand a pressure from any unforeseen cause than the lumber industry.

Digest of the exports from the Dominion of Canada of the products of the forest for the fiscal years of 1883, 1884, and 1885.

Articles.	Where to.	1883.		1884.		1885.	
		Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
		<i>Bd. m. feet.</i>		<i>Bd. m. feet.</i>		<i>Bd. m. feet.</i>	
Sawed boards,	Great Britain	18, 472, 000	\$188, 229	32, 763, 000	\$351, 169	26, 354, 000	\$301, 064
plank, &c.,	United States	544, 002, 000	6, 907, 288	563, 482, 000	7, 100, 615	568, 456, 000	6, 990, 013
pine.	All others	85, 281, 000	1, 041, 992	90, 887, 000	1, 203, 833	76, 321, 000	873, 376
Square pine,	United States	413, 460	29, 710	1, 579, 200	158, 473	2, 362, 200	22, 323
white and	Great Britain	146, 881, 886	3, 124, 898	162, 393, 600	3, 490, 241	112, 597, 400	2, 181, 264
Norway.	Others	33, 936	4, 090	1, 233, 600	16, 415	709, 200	13, 154
Square oak	United States	63, 036	472	387, 000	8, 853	493, 200	4, 607
	Great Britain	29, 107, 704	972, 470	25, 986, 000	876, 342	16, 526, 400	552, 082
	Others	83, 844	3, 386	146, 400	5, 302	594, 000	18, 886
Square ash,	United States	515, 304	4, 879	107, 400	1, 632	102, 000	1, 833
birch, elm,	Great Britain	34, 051, 680	572, 393	40, 832, 400	636, 588	34, 706, 400	612, 788
and maple.	Others	424, 116	5, 056	198, 800	2, 405	300, 600	3, 349
Basewood, but-	United States	702, 000	9, 579	365, 000	4, 775	939, 000	11, 610
ternut, and	Great Britain	853, 000	26, 486	875, 000	23, 024	504, 000	14, 447
hickory.	Others	5, 000	102			16, 000	417
Deals, pine and	United States	6, 594, 500	148, 687	5, 852, 000	66, 754	2, 731, 750	34, 463
spruce.	Great Britain	637, 221, 750	7, 727, 275	700, 396, 000	7, 610, 813	504, 402, 250	5, 363, 581
	Others	87, 843, 250	1, 152, 760	80, 484, 250	917, 940	78, 222, 000	987, 233
Logs:							
Oak	United States	1, 820, 000	29, 819	2, 225, 000	30, 399	1, 137, 000	15, 548
Hemlock	do	4, 323, 000	20, 814	4, 818, 000	19, 168	3, 629, 000	14, 752
Pine	do	2, 863, 000	18, 812	974, 000	8, 012	380, 000	2, 800
Spruce	do	6, 255, 000	30, 858	6, 830, 000	31, 793	11, 165, 000	49, 449
Other woods	do	28, 551, 000	159, 673	30, 880, 000	139, 207	31, 479, 000	143, 483
Logs	Great Britain	321, 000	2, 576	200, 000	814		
Deal ends or	do	30, 984, 250	310, 820	32, 485, 750	300, 158	24, 659, 250	249, 747
cut-offs.	United States					294, 000	1, 520
	Others	2, 359, 500	19, 225	2, 642, 750	12, 662	2, 103, 750	13, 772
		<i>M.</i>		<i>M.</i>		<i>M.</i>	
Shingles	United States	76, 615, 000	238, 615	76, 348, 000	165, 922	52, 287, 000	133, 298
	Great Britain			1, 134, 000	4, 229	3, 000	6
	Others	23, 796, 000	49, 915	22, 869, 000	37, 838	26, 710, 000	50, 428
		<i>Cords.</i>		<i>Cords.</i>		<i>Cords.</i>	
Shingle-bolts	United States	637	2, 685	721	2, 857	756	2, 906
Box-shooks	do		90, 255		84, 030		89, 444
	Great Britain		1, 778		4, 270		8, 489
	Others		1, 589		1, 913		6, 005
Staves, head-	United States		275, 983		385, 906		497, 432
ing, &c.	Great Britain		119, 064		72, 532		40, 365
	Others		43, 592		24, 114		23, 601
		<i>Pieces.</i>		<i>Pieces.</i>		<i>Pieces.</i>	
Railroad-ties	United States	2, 074, 930	484, 769	1, 367, 348	343, 092	712, 935	142, 049
	Great Britain	31, 535	62, 606	56, 571	71, 413	45, 100	55, 417
	Others	20, 183	6, 953	5, 400	808	2, 400	360
Lath and pick-	United States	147, 014, 000	186, 501	198, 474, 000	273, 430	136, 765, 000	220, 507
ets.	Great Britain	829, 000	1, 043	9, 048, 000	51, 273	3, 555, 000	22, 064
	Others	4, 857, 000	16, 109	7, 002, 500	26, 757	6, 342, 046	31, 636
		<i>Cords.</i>		<i>Cords.</i>		<i>Cords.</i>	
Lath-wood	United States	501	4, 031			245	260
	Great Britain					210	1, 843
Fire-wood	United States	164, 836	388, 659	158, 605	353, 570	145, 106	316, 299
	Great Britain	15	74			68	165
	Others	49	177			71	183

Digest of the exports from the Dominion of Canada, &c.—Continued.

Articles.	Where to.	1883.		1884.		1885.	
		Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Poles, hop, hoop, and telegraph.	United States.	<i>Pieces.</i>	\$226,835	<i>Pieces.</i>	\$180,926	<i>Pieces.</i>	\$84,789
	Great Britain.	753					
	Others.	103					
Hemlock bark.	United States.	<i>Cords.</i>	321,991	<i>Cords.</i>	399,598	<i>Cords.</i>	364,015
		65,194		75,932		74,794	
Knees and fut-tocks.	do.	<i>Pieces.</i>	32,850	<i>Pieces.</i>	18,499	<i>Pieces.</i>	7,610
	Great Britain.	2,282	1,389	15	74	361	
	Others.	1,656	1,449	177	5,214	1,648	
Masts and spars.	United States.	21,742	21,175	22,435	21,274	10,908	5,746
	Great Britain.	1,919	2,960	4,678	18,014	3,001	24,204
	Others.	3,936	20,062	1,147	6,242	2,889	12,741
Oars.	Great Britain.	14	91				
	Others.	853	1,831	368	894		
MISCELLANEOUS.							
Leached ashes.	United States.		49,984		21,146		23,761
	Others.		50,010		15		31
Pot and pearl.	United States.		19,051		50,030		7,629
	Great Britain.		239,669		218,674		140,074
Household furniture.	Others.		9,335		840		8,619
	United States.		130,180		121,543		147,416
Doors, sash, and blinds.	Great Britain.		3,575		8,187		21,424
	United States.		3,985		2,592		478
Extract of hemlock bark.	Great Britain.		16,389		49,416		44,860
	Others.		2,673		7,637		1,340
Other manu-factures of wood.	United States.		170,628		37,612		24,118
	do.		119,620		264,673		137,279
Total.	do.		14,978		58,871		41,506
	United States.		135,241		173,061		234,302
	Great Britain.		227,888		193,316		202,000
	Others.		34,992		38,087		44,697
Total.			26,337,944		26,827,690		21,695,960

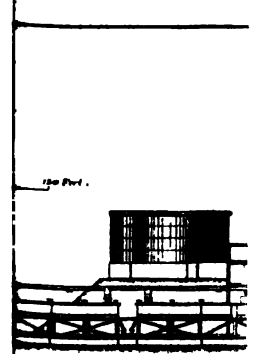
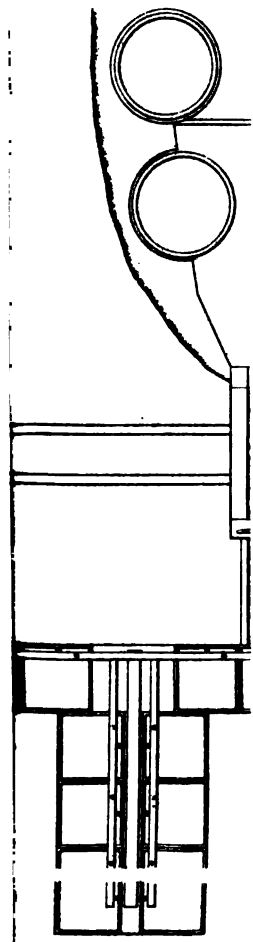
The following table shows a summary of the value of the various "products of the forest" exported to the United States from the Ottawa consular district in the fiscal years ending June 30, 1884, 1885, and 1886:

Articles.	1884.	1885.	1886.
Sawed pine lumber.	\$2,708,625	\$2,154,240	\$2,045,809
Box-shooks.	43,000	45,384	48,428
Lath.	23,123	25,164	26,456
Railroad-ties.	21,582	2,477	11,904
Pickets and curtain sticks.	16,670	12,767	24,781
Match-blocks.	13,445	8,177	8,450
Telegraph-poles.	9,213	3,099	2,533
Hemlock bark.	5,568	2,893	528
Fence-posts.	2,200		921
Shingles.	150		978
Doors and molding.			*2,118
	2,843,575	2,254,801	2,170,814
Total value of all merchandise through Ottawa office.	2,895,173	2,309,419	2,225,709
Per cent. of wood products to the entire business.	98.22	97.65	97.53

* In bond for export.

THOMAS W. HOTCHKISS,
Commercial Agent.

UNITED STATES COMMERCIAL AGENCY,
Ottawa, August 4, 1886.



190 Feet .

SODA NITRATE OF CHILI.

REPORT OF CONSUL MERRIAM, OF IQUIQUE.

In compliance with the circular of July 15, 1885, I submit the following report, which is necessarily restricted to the products of mines, as in this consular district there are no products of agriculture, of animal or vegetable fibers, of chemicals, drugs, or dye-stuffs, nor factories for the manufacture of crockery or glass ware, nor is timber produced in the district.

IQUIQUE.

In 1830, when the first small shipment of nitrate of soda was made to Europe, Iquique was a small settlement, occupied by a few fishermen, and would probably have never been anything else but for the discovery of caliche, from which that important article known as nitrate of soda is manufactured. The population then amounted to only a few hundred, while the census of last year shows a population of over 16,000 souls.

Iquique is built on a sandy plain, extending from the water's edge, and in the background at a distance of about two miles is a range of barren hills extending north and south along the coast and having an altitude of about 2,000 feet. There is not a tree nor a blade of grass to delight the eye; nothing is seen but an interminable waste of sand.

In the interior, at a distance of about 23 leagues from the coast, the *quebrada*, or ravine, of Tarapacá begins, where clover, corn, wheat, and garden produce for local consumption are cultivated by irrigation with water brought from the Andes, in *acequias*, or narrow canals, from time immemorial.

WATER SUPPLY.

Iquique, being situated in the rainless district, is absolutely destitute of potable water. The inhabitants are therefore compelled to resort to distilled sea-water, of which about 56,000 gallons are consumed daily, and to well-water brought from Arica, a town situated on the coast about 110 miles to the north, of which about 14,000 gallons are consumed daily, making an aggregate of about 76,000 gallons per day. The Arica water is brought in a small steamer, constructed especially for the purpose, making about three trips a week and bringing about 175,000 gallons each trip, the principal part of which is consumed by the railway company, whose line runs from this port to the nitrate establishments in the interior.

Another prospective source of supply of potable water is from Pica, at the foot of the Andes, and distant from Iquique about seventy-five miles. Somewhat more than a year ago a special privilege was granted by the Chilian Government to Mr. Thomas Hart to bring water from Pica to Iquique by a system of pipes. A late number of the European Mail states that Mr. Hart has ceded his privilege to a company recently formed in London, with a capital of £350,000, divided into shares of £10 each. For the concession so made Mr. Hart receives £35,000, of which sum £20,000 is paid at once in cash and the remaining £15,000 in fully paid-up shares.

The total cost of the enterprise, including the purchase of the springs of water in Pica, and of the estates upon which they are situated, with a prudent sum reserved for contingent, unforeseen expenses, including the £35,000 paid to Mr. Hart, is calculated at £324,000.

It is estimated that 273,000 gallons can be supplied daily, to which 50,000 gallons more may be added if necessary. Mr. Hart offers to contract with the company to complete the work within eighteen months for the sum of £250,000, including all the engineering expenses.

If, as it is proposed, this water is brought through the mineral districts of Huantajaya and Santa Rosa, a remarkable impulse will be given to mining in this province. Iquique, once supplied with an abundance of fresh water at a moderate price, will change its aspect from that of a barren waste to a blooming garden, for the soil is abundantly impregnated with the salts required for the nutrition of plants.

I should have stated that the water now distilled is distributed through the city in water-carts, and is sold for about 1½ cents (gold) per decaliter.

The municipality, whose annual income is about \$150,000 American gold, has lately completed a work which it is expected will to a great extent secure to us an immunity from the destructive fires which for the last six years have been of frequent occurrence and have caused the loss of millions of dollars.

A system of 6-inch pipes has been laid from the shore to an elevated point in the upper part of the city, by means of which a tank, holding 11,800 gallons, is kept constantly full of water. From this tank ramifications are sent down again throughout the city, and these pipes are kept constantly full and ready for use at any moment, all of the fire companies being supplied with keys to open the cocks placed at the street corners. As soon as a fire breaks out, two powerful pumps, manufactured by the Knowles Steam Pump Works, of New York and Boston, force the filtered sea-water up through the pipes, and the combined effect of the hydrostatic pressure of the water in the tank and the powerful propulsive power of the two pumps enable the fire-engines to throw streams of an inch and a half to a height of 60 feet, which is more than sufficient to reach to the top of any house in the city. The different fire companies have been called out for exercise on several occasions, with a result entirely satisfactory.

The rates of insurance, which are now 10 per cent. a year, ought now to be greatly reduced. The insurance companies, however, do not manifest a disposition to make any reduction until a practical test has been made in a case of fire.

BUILDINGS AND STREETS.

The buildings are of wood, and are mostly of one story, although the Bank of Valparaiso and the National Bank of Chili have in process of construction two solid and elegant buildings of stone, with walls of 2 feet in thickness, properly secured against danger from earthquakes by iron girders conveniently adjusted.

The streets are macadamized and sprinkled daily with salt water; and 47 carriages, many of which are equal in style and comfort to private carriages in our principal cities at home, contribute to the convenience of the people. A metropolitan railroad is projected, the officers of the company have been elected, and shares will soon be put upon the market.

The streets are mostly of 15 meters in width (about 50 feet). Many are of 20 meters, and all new streets must be of this width.

Two lines of steamers, English and Chilian, touch here semi-weekly, running between Valparaiso and Callao, and there connecting with mail steamers on the Isthmus. Steamers of a German company running between Hamburg and Callao, and of a French company running between Havre and Callao, also make monthly trips.

Iquique is to-day the second port of importance in Chili, ranking next to Valparaiso as to population and business enterprise.

NITRATE INTERESTS.

I have given this hasty sketch of Iquique in order to emphasize the importance, commercially, of nitrate of soda, the manufacture and export of which have made Iquique all that it is to-day. It may truly be said that is the only industry of the province which has contributed to the aggrandizement of the city, for although since the time of the Spanish conquest in the sixteenth century the rich silver mines of Huantajaya and Santa Rosa have produced many millions of that valuable ore, they have not acted as a factor to any considerable extent in producing the change which has been brought about in Iquique during the past fifty years.

A nitrate factory is here called *oficina*. The crude nitrate as it is dug out of the earth is called *caliche*; the deposits themselves, *calicheras*. The manufactured nitrate of soda is called *salitre*, and the manufacturer is called a *salitrero*. The immense importance of this industry may be inferred from the fact that 10,000,000 Spanish quintals are annually exported from the different nitrate ports between Antofagasta and Junin, a port a few miles to the north of Iquique, and also that this region enjoys a monopoly of the article; for although it was published a few years ago that nitrate beds had been discovered in Nevada, it is natural to suppose either that the quality of the *caliche* is inferior or that the amount is small, as since the date of their discovery no steps have been taken to develop them.

The principal use of *salitre* in Europe and in the United States is in the manufacture of fertilizers, a limited amount being also employed in the arts and in the manufacture of gunpowder.

In order to give an idea of the methods employed in the manufacture of *salitre*, I give below, with the permission of the author, Robert Harvey, esq., some extracts from a paper read by him before the Institution of Civil Engineers in London in the year 1884. This paper of Mr. Harvey gives account of the system pursued in the *oficina* "Ramirez," and the method thus described may be taken as a fair sample of that employed in the most recent and best *oficinas* now working.

PRICES AND PRODUCTION.

The increased production of *salitre* elaborated in the province of Tarapaca and in the establishments farther south during the years 1882 and 1883 caused the natural result, a glut in the market, and to such an extent as to lower the price of nitrate to a point below the cost of production; for at the close of 1883 and at the beginning of 1884 sales were effected at \$2 currency per quintal of 95 per cent. purity, which represented \$1.32 in United States gold. The *salitreros* were thus threatened with speedy and certain ruin, and it was necessary to take efficient steps to prevent the further depreciation in the price of nitrate, and which should at the same time tend to raise the price to such a point as to save their capitals thus placed in jeopardy, and to establish their business again on a firm and safe basis.

The only remedy possible was the limitation of the production, and it was decided to reduce it to 10,000,000 quintals per year, to date from August 1, 1884, the production for the year 1883 having been 12,822,778 quintals (Spanish) of 100 pounds each.*

At the first quarterly meeting of the salitreros this period was considered to be too short, and it was extended to March, 1886, and at a subsequent meeting still further extended to the 31st of December, 1886. Fortunately for the salitreros, there was manifested from the outset a decided feeling of unanimity in favor of the system proposed and subsequently adopted.

On the 8th of April, 1884, a general meeting was held of the salitreros, when it was decided to carry out the plan proposed, and on the 21st of the same month a circular was issued requesting each salitrero to reply to the following questions:

- (1) Whether he accepts the project, and for what period.
- (2) The amount of salitre actually produced by him.
- (3) Whether he is disposed to accept the quota assigned to him by the committee, to be fixed in view of the demand for the article.

To this circular all of the salitreros replied, and without a dissenting voice declared their conviction of the necessity of limiting the production and of forming a central directory to carry out the idea practically. In order to fix the quota to be assigned to each salitrero, the committee decided to adopt as a basis the productive capacity of each oficina, and called a general meeting for the 10th of June, at which a majority of the salitreros were present, who unanimously agreed to enter into the combination proposed, and to carry out the projects of the committee. It was subsequently decided that on the 31st of July the salitreros of this province should remit to the president of the committee the most accurate statement possible of the quantity of nitrate on hand, whether in the oficina, in storehouses in port, or already on board for shipment, reserving for a later date the acquisition of the necessary details from the oficinas in Tocopilla, Antofagasta, Aguas Blancas, and Taltal. It was also agreed that on the 1st of August all of the oficinas should stop work until the morning of the 16th of the same month. Committees of experts were also named to visit all of the oficinas of the province of Tarapacá, and compare the results of their personal observations with the report of each salitrero as to the amount on hand.

These committees reported the productive capacity of the thirty oficinas then working to be 1,393,500 Spanish quintals per month. The permanent committee accepted this report as a basis temporarily, allowing a period of 15 days, until the 15th of August, to present such claims as any salitrero might think himself entitled to with reference to the productive capacity assigned to his oficina. It was also decided that each of the oficinas of this province should, during the month of August, manufacture only 45 per cent. of the amount designated as its productive capacity, leaving the final quota to be determined at a later day. On the 29th of August the committee reduced the amount to 40 per cent. to date from the 1st of September.

In October a majority of the salitreros on the coast recommended to the committee a complete suspension of all work in the oficinas during the month of November, which was approved, at the same time fixing the quota of production from the 1st of November, 1884, to the 1st of April, 1885, at 30 per cent.

* For the information respecting the proceedings of the nitrate committee, I am indebted to the kindness of Messrs. Hermann J. Schmidt, president, and Marcus F. Aquirre, secretary of said committee.

This resolution was so amended as to meet the cases of those who could not paralyze work completely in November in view of their existing contracts with purchasers. There were six oficinas which continued working in November, and as a recompense to those who stopped these were allowed to manufacture 10 per cent. more, or 40 per cent. of their productive capacity, from the 1st of January to the 1st of April, 1885.

At a general meeting of the salitreros, held on the 6th of February, 1885, it was unanimously agreed to give a special power of attorney to the president of the committee, authorizing him to take such legal steps as might be necessary to enforce compliance with the articles of agreement of the 10th of June, 1884, and to prevent any salitrero from increasing the productive capacity of his oficina by increasing its machinery or otherwise, or by establishing new oficinas; also authorizing the directory to extend the period of the combination to the 31st of December, 1886, and also to limit the annual production on the coast to 7,000,000 quintals, thus reducing to 25 per cent. the quota of each oficina. A commission was also named to go to the oficinas in the south to obtain the concurrence of the salitreros of Tocopilla, Antofagasta, Caleta, Olivo, and Taltal.

Notwithstanding all of these well-devised measures of the committee to raise the price of nitrate, they were not for a time completely successful; for, although the price in Valparaiso rose in September, 1884, to \$2.95 (\$1.85 gold), it fell again to \$2.55 (\$1.60 gold)—prices which bore no just proportion to those of the article in Europe.

Here it should be stated that only in exceptional cases do the producers export nitrate on their own account. Sales are almost universally effected in Valparaiso by a few large houses there, who export for themselves, or who act as agents for dealers in Europe and in the United States. It is easy, then, to explain why the Valparaiso merchants try to keep the price of nitrate as low as possible here.

Information from trustworthy sources gave reason to suppose that the consumption of salitre in 1885 would be much less than in former years. Reduced production of beet-root sugar in Germany, also on account of the great fall in its price, has had much to do in bringing about this result, and also in causing the new reduction in the amount of nitrate to be manufactured from April 1, 1885, to 7,000,000 quintals.

EXTENDING THE USE OF THE NITRATE.

The nitrate committee has spared no expense nor left any means untried to increase the consumption of salitre in the countries where it is known and to introduce it into others.

With this object they have offered a prize of £1,000 for the best essay on the use of salitre as a fertilizer and on the means to be adopted to increase its consumption.

The place of meeting of the members of the prize committee was in the city of Darmstadt, under the presidency of Professor Wagner, director of the Agricultural Institute of that city, and consisting of six scientific men of different nationalities. I have been informed that Professor Johnson, of the United States, who originally formed one of the committee, subsequently resigned.

Funds to the amount of £5,000 were contributed to carry into effect the project for payment of the prizes, salaries of the members of the prize committee, practical experiments, &c., besides 500 tons of nitrate for the experiments referred to. The successful essay is to be published in Spanish, English, German, French, Italian, Russian, and Danish.

Efforts will be made to secure the use of salitre in place of the phosphates, which are now so largely used in South Carolina and other Southern States. Two thousand pounds have been voted to secure this object.

Before the 1st of October, 1885, 29 essays were produced to Professor Wagner, which the committee over which he presides are carefully studying, but up to the time of writing, the name of the successful competitor has not been announced.

Of these twenty-nine, 11 are from Germany, 8 from England, 4 from France and Belgium, 2 from the United States, 3 from the West Indies, and 1 from Brazil.

SITUATION IN 1885.

In February of 1885 the outlook for the combination was very gloomy, as several salitreros had failed to adhere to their obligations, and had increased the productive capacity of their oficinas, and it was also feared that the stock on hand here and abroad was more than enough for the probable demand for the whole of the year 1886.

On the 8th of May, 1885, the president of the nitrate committee had the satisfaction to announce that their determination to reduce production to 7,000,000 quintals had produced the most favorable results; that the price of nitrate had been maintained at a satisfactory figure, and that, with a single unfortunate exception, there was perfect harmony among the members of the combination.

FUEL AND WAGES.

The fuel employed is English steam coal, preferably "West Hartley" or "Orrell." This can be placed in an oficina distant about 45 or 50 miles for 55 cents (gold) per quintal at present prices. The present price is 18s. per ton and the freight on the railroad is 1 cent a quintal for each mile and 36d. per paper dollar, which gives about \$1.10 currency or 55 cents gold.

Wages differ in the different oficinas, but the following may be taken as a fair average in United States gold:

Day laborers	\$0 90 to \$1 10
Shaft-sinkers (<i>barreteros</i>).....	1 25 to 1 50
Carpenters	1 50
Blacksmiths	2 00
Firemen.....	1 50

The hours of labor are from 6 a. m. to 6 p. m., less one hour's rest at noon.

Each oficina has a store and a restaurant, which are owned by the salitrero, and are supplied with a good assortment of everything that a peon can possibly require, both in the way of edibles and clothing. An account-current is kept with each peon, who is allowed to draw daily the whole or a part of his earnings in fichas, or tokens, which he exchanges for goods at the store or for food at the restaurant. The balance that may be due him at the end of the month he receives in cash. As to supplies of goods and food for his peones, each salitrero enjoys a monopoly of them, as no one else is allowed to traffic within the limits of his oficina. The food is of a good quality and sufficiently varied. All of it is imported from abroad, as the district produces nothing. The food consists of fresh meat, charqui, bread, butter, condensed milk, beans, rice, cracked wheat, potatoes, turnips, onions, cabbage, tea, coffee, chocolate, &c. In most of the oficinas beer and distilled liquors are sold to the laborers in limited quantities. A very large proportion of the peones expend all of their earnings at the store and restaurant. Those who have a balance in their favor at the end of the month generally gamble it away within a few days or hours, so that all of their earnings soon find their way back to the store.

COST OF PRODUCTION.

It is impossible to obtain trustworthy data as to the cost of labor relative to the quintal of salitre. Salitreros are not generally disposed to give with accuracy the items necessary to make up an exact estimate. Then, again, the cost of production varies in the different oficinas, owing to a variety of causes, as, for instance, the quality of the caliche and its abundance, the difficulties of its extraction, depending upon the thickness and hardness of the costra, the abundance or scarcity of laborers, distance from port, &c.

It may, however, be stated that a quintal of coal at the present time will make about 10 quintals of nitrate, and that a quintal of nitrate may be placed on board ship, all expenses and duties paid, for \$2.50 currency, or \$1.25 gold, at the present rate of exchange. This has reference to an oficina distant about 45 miles from port.

Salitre is used principally as a fertilizer, and to a limited extent in the arts and in the manufacture of gunpowder.

A quality inferior to 95 per cent. purity is rarely made. That of 96 per cent. is the only kind which is sent to the United States.

The export duty on nitrate of soda is \$1.60 silver, at 38d., per metric quintal of 100 kilos, or 207 pounds Spanish. In our tariff nitrate of soda is on the free list.

The bulk of the nitrate is sent to Europe. The amount exported (to the United States) rarely passes a million of quintals. It is always sent to the States in sailing vessels. Freights to the States are at present very low, from 23s. to 26s. per ton, and to Europe 28s. or 29s.

I will here state the nitrate committee have raised the quota to 30 per cent. of the productive capacity of each oficina, and that perhaps 10,000,000 quintals will be exported this year.

J. W. MERRIAM,
Consul.

UNITED STATES CONSULATE,
Iquique, Chili, April 8, 1886.

**MACHINERY FOR THE MANUFACTURE OF NITRATE OF SODA AT THE
RAMIREZ FACTORY, NORTHERN CHILI.**

By ROBERT HARVEY, *Associate Member of the Institute of Civil Engineers.*

[Inclosure in Consul Merriam's report.]

The production of nitrate of soda has since 1869 been developed with great rapidity, and its manufacture gives employment to a vast amount of English-made machinery and capital, and many English engineers and mechanics. In 1845 nitrate of soda was produced by extracting the *caliche*, or raw material, from the ground and boiling it in copper pans of native manufacture, the fuel employed being carbonized wood dug up from the Tamarugal Pampa, in the province of Tarapacá, formerly in Peru, but recently annexed by Chili, where there are in many parts indications of a sunken forest. Probably owing to the primitive method of manufacture, and the fact that nitrate of soda was not commercially known, the exportation in 1845 was only 6,000 tons. It increased by degrees up to 70,000 tons in 1859, and in 1883 the exportation of this valuable fertilizer reached 12,500,000 Spanish quintals, or 570,000 tons. Such a production would have created an excess over the demand had not the producers formed an agreement to limit their output so as to meet European requirements, which at present are 460,000 tons annually. This amount is produced by thirty-seven different establishments or factories, technically known as *oficinas*, and by thirty distinct firms or owners, the production of English companies being 186,000 tons, or 40 per cent. of the whole. The productive capacity of the *Oficina Ramirez*

is 140,000 quintals, or 6,360 tons, monthly; but the works are now, like all other establishments, limited to 40 per cent. of their productive capacity, or 56,000 quintals per month, giving an annual output of 30,000 tons.

The process of manufacturing nitrate of soda, and a description of the machinery of the Oficina Ramirez, which is the largest establishment of its kind in the world, form the subject of this paper.

In September, 1882, the author received instructions from the directors of the Liverpool Nitrate Company, limited, who own 6 square miles of nitrate grounds in the district of Ramirez, in the province of Tarapacá, to prepare plans and estimates for the construction of an oficina capable of producing from 6,000 to 6,500 tons of nitrate of soda per month, this total being 1,000 tons more than was in the power of the largest oficina then extant. In January, 1883, the plans and specifications were laid before the directors and approved of, and the author was instructed to order the necessary machinery (Plate 7). Six steel boilers, 30 feet long by 6 feet 6 inches, double flues, with six Galloway tubes, were constructed by Messrs. R. Daglish & Co., of St. Helen's. Twelve boiling-tanks, with steel condensing tubes, ninety crystallizing-tanks, two feeding-tanks, a five-compartment washing-tank, as well as three circular tanks, 25 feet in diameter by 12 feet high, came from the works of Messrs. Preston, Fawcett & Co. The locomotives and rolling-stock, with a length of 2½ miles of portable railway, as well as two semi-portable engines for the wells, were made by Messrs. John Fowler & Co., of Leeds, and the engines, pumps, machine-tools, &c., by Messrs. Tangye Brothers; and three crushing-machines were made by Messrs. North, Humphrey & Dickinson, of the Tarapacá Foundry, Iquique.

Having seen the contracts for plant properly placed, and having purchased the machinery required for the wells for immediate use, which was sent by steamer, the author left for Iquique, arriving there on the 15th of May. He at once commenced making the necessary excavations for the foundations for the machinery, which came by sailing vessels on the 10th and 29th of December. The first batch of crystallizing-tanks, which were shipped unriveted, reached the oficina on the 23d of December.

Owing to the salt and other solvents contained in the soil, the greatest care had to be taken in preparing the foundations for the carrying-walls, as if only a small quantity of water should penetrate to the foundations, they would immediately become damaged, perhaps beyond repair, losing their original lines by subsidence, and thus fracturing the steam and other connections resting on them.

In making the foundations for the carrying-walls, which are constructed of trimmed igneous boulders found in the locality, the ground was excavated to a depth of 12 feet over an area of 7,500 square feet, although the walls are only 84 feet long and 29 feet apart from outside to outside. A layer of broken boulders 2 feet deep was first deposited, and a filling of one-third Portland cement, one-third sharp sand, and one-third hydraulic lime was run in the interstices. Next a layer of concrete, made of hard stone, of about 1-inch cubes, with one-half cement and one-half sand, was superposed 1 foot deep, and then three layers of good masonry all cemented. On this the walls were built, 12 feet high, 6 feet wide at the base, and 3 feet 6 inches at the top. This apparently excessive batter is necessary as a safeguard against the frequent earthquakes, which often cause much damage to machinery constructed on weak, straight, or high foundations. A wooden framing of Oregon pine, with the uprights and runners 1 foot square, the uprights being 5 feet 6 inches from center to center, was next built, on a wall 2 feet 6 inches high by 2 feet 6 inches thick, in the center of the space between the two main walls, and parallel to them, in order to obtain a good distribution of the weight of the boiling-tanks. On this framing 24 iron girders, 10 inches wide, 10 inches deep, and 35 feet long, were laid, and on the top of the girders the boiling-tanks were bolted in sections and riveted. The inside carrying-wall is backed up by cemented masonry, 6 feet high and 4 feet wide, with an inward-sloping surface, so as to catch any drainage or leakage from the ends of the tanks, from whence it flows into the passage between the two main walls by means of 10 drains or conduits of 3-inch pipe built in the main wall. From the north to the south end of the floor between the walls there is a fall of 6 inches, causing all the drainage to flow to the south end, where a canal and tank are provided for its reception. Three parallel walls are built in front of the main walls, on which the washing-tank, consisting of 5 compartments, each 24 feet by 6 feet 6 inches, rests.

The boiler, flues, and setting are constructed on Livet's system, and give excellent results. They are built in pairs as regards flues, with a chimney 42 feet high by 5 feet in diameter, of iron, having a base of 9 feet for each pair of boilers.

The feed-water tank, fresh-water tank, top mother-liquid tank, the well-water tank, are all erected on substantial masonry built on deep concrete foundations, and rest directly on a bed of cement.

The 90 crystallizing-tanks, or precipitating-tanks, 16 feet by 16 feet by 3 feet deep on one side, sloping to 2 feet 9 inches on the other, in order to thoroughly drain the precipitated nitrate, are erected on a strong frame-work of Oregon pine, 6 inches square in section, with longitudinal, transverse, and diagonal stays, 4 inches square

in cross-section. Under each crystallizing-tank there are 6 runners of timber, 4 inches square, on which it rests, on the projecting ends of which is a plank roadway for the men in charge of the hot nitrate in solution, known as *caldó*, literally boiling juice. This consists of caliche dissolved in boiling mother-liquor. All the crystallizing-tanks with frame-work rest on low stone walls built on a dry rubble foundation, cement being in this case unnecessary, as leakage from mother-liquor or nitrate in solution does not dissolve the ground on which it falls.

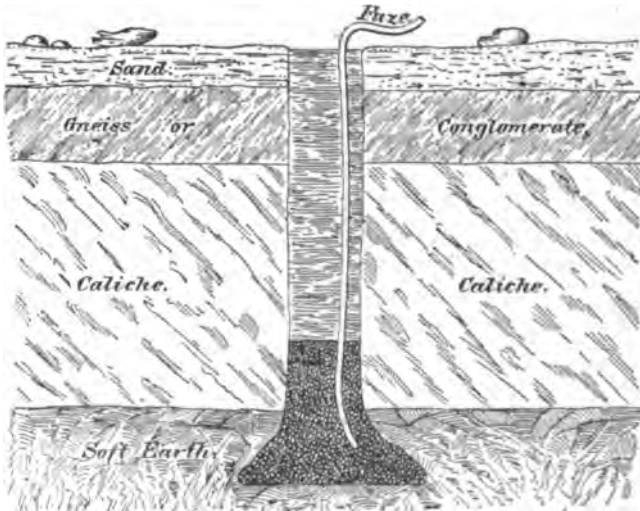
The whole of the known nitrate deposits in the world are situated on the west coast of South America, between south latitude 19° and 27° , although there are indications of nitrate in Nevada and California.

The caliche, or raw nitrate of soda, is a mineral deposit formed, it is alleged, by the contact of decomposing animal and vegetable matter with the salts left on the retreat of the sea. This theory of its formation is supported by the frequent discovery of guano, sea-birds' eggs, fishes, feathers, birds' skeletons, shells, fossils, &c., in proximity to the caliche, and at a depth of 12 to 15 feet below the surface of the ground, and also by the presence of iodine as iodate of soda, which is peculiar to the sea.

The best deposits are found on the skirts of the Tamarugal Pampa. The caliche lays in beds of a thickness varying from 6 inches to 12 feet, beneath a covering of from 1 foot to 10 feet of conglomerate or pudding stone, or hard rock, principally porphyry, but varying also in character to foliated gneiss, greenstone, and syenite. No caliche beds are known to exist nearer than 15 miles from the sea-coast, and the farthest, those in the district of Atacama, are distant about 90 miles. The Ramirez caliche beds, or raw nitrate deposits, comprise 3,270 acres, or nearly 6 square miles, and are situated on the border of the Tamarugal Pampa, 59 miles from the port of Iquique by the line of the Nitrate Railway Company, and 42 miles by direct mule road.

The caliche is plentiful and easy of extraction; its chemical analysis is, nitrate of soda, 51 per cent.; common salt, 26 per cent.; sulphate of soda, 6 per cent.; sulphate of magnesia, 3 per cent., and insolubles, 14 per cent.

In order to provide caliche sufficient to meet the requirements of so large a system of machinery, at least 250 mules and 40 carts would be required; to avoid this expense the author introduced the innovation of a portable railway with 2 locomotive engines and 80 side-tip cars, thus precluding the necessity of employing more than 30 mules and 5 carts for taking the caliche to the side of the line which runs out $1\frac{1}{2}$ miles in the caliche quarries. This has proved a most efficient and economical mode of carriage.



The locomotives are four-wheeled coupled, side-tank engines, with 2-wheel trailing bogie and outside cylinders 8 inches in diameter, and having 2 feet length of stroke. The driving-wheels are wrought iron, with steel tires 2 feet 6 inches in

diameter, and 4 feet wheel base; the trailing-wheels are cast-steel, 1 foot 6 inches in diameter; the weight of the engine in working order is 6 tons 15 cwt., and it carries 250 gallons of water and 5 cwt. of coal. The locomotives, as well as the cars, were designed by Mr. David Greig, member of the Institute of Civil Engineers. The line has a 2-foot gauge, with steel rails and steel sleepers, known as Greig's patent portable railway. The sharpest curve on the line is 60 feet radius, and the steepest gradient 3.15 in 100. The rails weigh 16 pounds to the yard. The cars, with frames and wheels, weigh 5 cwt. each, and carry 1 ton 10 cwt. of caliche. The ordinary load for an engine is 15 cars, or from 22 to 23 tons per trip.

The caliche is extracted in the following manner: A shaft about 1 foot in diameter is sunk. Into this a boy is lowered, who forms a recess at the bottom in the shape of an inverted funnel, which is filled with a slow blasting-powder (as shown in the above figure), made on the works, and is ignited by one ordinary fuze. This causes a dull explosion, breaking and loosening the ground around the shaft for a radius of about 10 yards. The overlying stratum of hard rock, porphyry, gneiss, &c., locally known as "costra," is removed, and the caliche extracted, and split and broken by sledge-hammers, steel wedges, and bars into blocks of about 30 pounds weight. It is then loaded into the cars, and carried into the crushing-machines, and there broken into cubes of about 2 inches. The three crushing-machines are driven by a 25-horse-power Tangye engine.

Cars stand under the mouths of the crushers to receive the broken caliche, and these, when fully loaded, are hauled up to the turn-table by the winding-engine, and from there shovelled on, and the contents tipped into the boiling-tank in course of being charged. The turn-table is not in the center of the six sets of rails serving the 12 boiling-tanks with the side-tip cars, but is on one side, and is always open to the rails which lead to the last two boiling-tanks, so that in case of the winding-engine overhauling, the cars cannot be derailed. The boiling-tanks are heated by a 3-inch steel spiral pipe 6 rows deep, 1 foot off the sides, with steam from the boilers at the pressure of 60 pounds to the square inch. The steam enters at the top of the spiral, and leaves at the bottom of the tank by a return-pipe which leads to the return-valves of the boilers, thus forming a circuit.

The boiling is effected by the well-known Shanks's lixivating system, introduced in nitrate manufacture by Mr. J. T. Humberstone, causing a continual circulation of the lighter liquid to the other boiling-tanks by following the denser and heavier solution. As soon as the solution, which has now become caldo, stands at 110° by Twaddell's hydrometer, it is allowed to settle for a short time and is then drawn off into the first canal, from which it runs into the crystallizing-tanks by means of other canals. The caldo is run off at a temperature of 240° Fahrenheit.

The *ripios*, or refuse, in the boiling-tanks is then washed by well water, and the washings are run off into the washing-tank, taking in solution nearly all the nitrate of soda which may remain in the refuse. The washings are pumped up by a centrifugal pump and used over again in the next boiling-tank. When all the washings have run off, the doors at the bottom of the boiling-tank are opened and the refuse falls into cars placed beneath and is drawn away and dumped on the refuse-heap.

After the nitrate solution has become cool, and the nitrate of soda has crystallized in the tanks, the *agua vieja*, or mother liquor, is run off into a set of return canals, by which it flows into the bottom mother-liquor well, which is a round tank 25 feet in diameter and 12 feet deep, sunk level with the surface of the ground. From here it is pumped up by two of Tangye's 4-inch special pumps to the top mother-liquor tank, from whence it is run into the boiling-tanks to undergo a similar process. The mother-liquor stands at 90° Twaddell.

When the nitrate in the crystallizing-tanks is fairly drained, it is shoveled out on to the drying-floors, where it soon becomes perfectly dry in the tropical sun, and is put in sacks weighing about 3 cwt. each when full, and loaded on the railway cars, which are run on to the drying-floors by a siding in each floor, 100 sacks being carried on each car. It then goes to Iquique by rail, and is exported to Europe and the United States as the well-known fertilizer and article of commerce, nitrate of soda.

The cost of the machinery, plant, and construction of these works amounted to £110,000. The whole was finished and was producing nitrate on the 23d of May, 1884, or in the short space of six months after the arrival of the first lot of machinery. The celerity with which the machinery was placed in a state of complete efficiency is partly due to the choice of good mechanics and artisans brought out by the author from England, and to the firms who supplied the machinery, and especially to the able assistance rendered by the manager and resident engineer, Mr. James Anderson. The disadvantages of working in a desert 60 miles from a town considerably increased the difficulties of constructing these works.

There is but one oficina on this coast with more boiler-power than Ramirez, namely that of Antofagasta, designed and constructed by Mr. J. F. Spencer, member of the Institute of Civil Engineers, assisted by the late Mr. J. G. Adamson, associate member of the Institute of Civil Engineers; and it is probably the finest piece of plant engi-

neering in South America; but it has never produced more than 4,500 tons of nitrate per month, owing to the very low grade of caliche belonging to the works, the average now only containing 20 per cent. of nitrate, the remainder being salt and insolubles. The refuse thrown out from Ramirez tanks contains only 3 per cent. of nitrate. This could be extracted by more washing, but it would cause a superfluity of weak washings and a reduction in the strength of mother-liquor, so as to need further evaporation in order to reduce the volume and raise the density. During the past six months the ratio of nitrate produced to coal consumed was as 12 to 1; or for every ton of coal burned no less than 12 tons of nitrate of soda were manufactured.

One of the most serious questions in the nitrate districts is the supply of water. The water found in wells in the Pampa collects in hard cavities by constant percolation from the melted snow on the Andes or Cordilleras. The course of this water is, however, very irregular; and there are some oficinas which have to pump the necessary water over a distance of from 4 to 5 miles. Fortunately, in Ramirez the supply of water is practically unlimited. The two wells are 82 yards deep, by 9 by 10 feet, timbered all the way down with 12 by 2 inch lining, and 6 by 6 inch frames at every 4 feet to bear the thrust of the lining, and to carry the guides for pump-rods. They are worked by three-throw Tangye pumps, 3 inches delivery, in each, and each well can deliver 70,000 gallons in twelve hours. This water, however, is contaminated by salt and alkaline matters, which necessitates the cleaning of the boilers every two months.

In Ramirez well-water is conveyed in pipes from the large tank to the center of the square for workmen, for culinary and household purposes, but as this is unfit for drinking, soft water is provided by condensing the exhaust steam from the large engine and steam-pumps.

Owing to the reduced production before alluded to, only 300 men are now employed on the works, but there is living accommodation for 600 workmen with their families in a large plaza, or square, and two streets. The work in this establishment is carried on both night and day, and at night the works are lighted by two 6,000 candle-power arc lights, provided by a Siemens A dynamo, driven by a 4 horse-power Tangye engine. There is also telephonic communication with Pozo Almonte, the nearest telegraph station to Iquique, 17 miles from Ramirez.

PRODUCTION AND LABOR IN ECUADOR.

REPORT OF CONSUL-GENERAL BEACH.

PRODUCTS OF AGRICULTURE.

The soil in the whole lower section of Ecuador is a water formation, and may be described as a dark loam. The soil in the mountainous sections, both in the valleys and on the mountain sides, is pumice—volcanic dust, when first emitted, of the consistency of wood ashes—which has undergone various changes, and now presents all phases, from a lightness, to be drifted by the winds, to a compactness almost as hard as stone. The geology of the country shows that all of the soils were primarily an outcast of volcanoes, those of the lower sections being pumice washed down by the numerous creeks and rivers, and those of the upper sections the pumice as it has fallen both on the mountain sides and in the valleys. During one eruption of Cotopaxi in two days four inches of pumice fell down on Quito, eighty miles distant. At different periods the several volcanoes have greatly added to the soil of all sections of the country. The fresh pumice is of no value as a soil; but in time, as it becomes compact and its elements transformed by rain, sun, and wind, it sustains vegetation. The soil is best that has bene formed by the water's drift to the river-bordering sections; but that among and on the mountains sustains vegetation up to the snow line when it has undergone the necessary atmospheric changes. A light fall of pumice will not materially affect vegetation, but with great volcanic eruptions the fall is so deep as to obliterate the previous soil, and it takes time, as before stated, before the new pumice becomes

vegetation-sustaining. The pumice emitted from Cotopaxi and other Ecuadorian volcanoes is similar in appearance to that of Vesuvius. Cotopaxi, however, has thrown out immense quantities of rocks and stone, in size from twenty tons downward, but no lava like that at the base of Vesuvius. The soils of Ecuador, though having a common volcanic origin, in elements of production comprise first-class, fair, and poor qualities.

LANDS AND LABOR.

The national Government owns all of the unoccupied lands, by whom it is sold as there are applications to purchase. A portion of the occupied land is managed by resident owners, but the larger part is worked under leases.

In the value of United States currency (in which all the values given in this report are stated) the haciendas are rented per year on a basis of \$4 for twenty-two acres. Most of the haciendas contain from 500 to 1,000 acres, though there are both larger and smaller ones.

Nearly all agricultural labor is performed under the peonage system—a system of wages and debt; labor compulsory until all debts are paid, and the payment of all debts is an exceedingly rare occurrence. In the lower sections of the country the peon is paid \$8 per month, and \$4 per month among the mountains. As a quite general rule three peons will perform an amount of labor equal to that performed by one laborer in the Northern States of the United States.

IMPLEMENTS.

In the lower section the principal farm tool is the machete. Iron bars flattened at one end are used for planting rice, sugar-cane, and Indian corn. In the mountainous sections, especially near Quito, crude wooden plows having a single handle are used. The part entering the soil is covered by a piece of iron fashioned by a blacksmith. It does not make a regular furrow, but works like a hog's nose, turning the soil both ways into ridges. Brush bound together is the only harrow in use.

No agricultural machinery is used, unless sugar machinery may be thus rated.

LABOR.

The hacienda laborers as a rule work nine hours per day—from 6 a. m. till 11, and 12 till 4 p. m. If employed temporarily, they are paid weekly; otherwise, as it happens.

Laborers are given 12 ounces of meat, 14 ounces of rice or beans, and a little lard and salt per day.

The usual clothing of a laborer is 3 coarse shirts and 3 coarse pairs of pantaloons per year; total cost, \$6.

The laborer's dwelling consists of tall posts set in the earth, a thatch roof, and a floor made of split bamboo. Their cost ranges from \$25 to \$100. No rent is charged.

The only tax upon agriculture is the *diezmo*, a one-tenth tithe of the annual products—a tax for the benefit of the church.

Cocoa is the only cultivated product of the land that is exported to much extent. A small amount of coffee and a little fruit are sent abroad.

The main imported articles of food are flour, lard, salted and smoked meats, fish, and canned goods.

HORATIO N. BEACH,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Guayaquil, September 11, 1885.

PRODUCTION AND LABOR IN VENEZUELA.

REPORT OF CONSUL BIRD, OF LA GUAYRA.

Venezuela is virtually an agricultural country, although there are certain other industries, such as chocolate and confectionery establishments, two or three saw-mills, a tannery, and various shoe shops in this consular district. The number of laborers in these being always inconsiderable, and the larger proportion of the work being executed outside of the shops, it would be manifestly improper to dignify these small enterprises with the title of factories.

For the purpose of replying to the specific inquiries upon this subject, as indicated in the Department Circular, the *estancia*, or plantation, called "Juan Diaz," the property of Hon. William Ackers Cage, the British vice-consul at La Guayra, has been selected as offering favorable conditions for the proper presentation of the facts in relation to this industry. This is a large and beautiful body of level land, lying 9 miles east of La Guayra, bounded on the north by the Caribbean Sea, and on the south by the lofty peaks of the Venezuelan Cordilleras. To the eastward it stretches off towards the village of Naignatá, and on the west its lines touch the ancient pueblo of Caravalleda. Somewhere near the center of the place rises an isolated hill, similar to those in the prairies of Alabama. On this attractive eminence are situated the dwelling and farm-houses of the proprietor.

PRODUCTS OF AGRICULTURE.

(1) The lands are high and low, hilly and level; a mixture of vegetable or alluvial soil, sand, stone, and clay. While irrigation is not necessary to the high lands, on account of their cooler temperature, yet it is essential to the low lands. The alluvial soil is from 1 to 2 feet in thickness.

(2) The customary tenure of land is by freehold; being purchased from the Government.

(3) In this locality the customary rent per annum of land worked under lease averages from \$8 to \$10 per tablon (equal to 10,000 square yards) for hilly lands not under irrigation, while for a like area of low lands under irrigation the rent is double the above-mentioned average. Near the towns, however, rents are proportionately higher, according to circumstances.

(4) Labor is performed by the job or by the day, at fixed sums, according to the class of work performed. Cartmen and plowmen are better paid than ordinary field laborers.

(5) The plow for oxen is the only native tool. It consists of a triangular piece of flat steel or iron, attached by three stout nails to a forked stick. Other tools, such as hoes, spades, axes, and cutlasses, are imported.

(6) The machinery for manipulating coffee and manufacturing cane sugar is all imported. For the former, the Lidgerwood machinery from the United States and the Van Der Puyt (Belgian) made in England are most used; for the latter, the usual mills, pans, &c., of the United States are used.

(7) Laborers are paid 50 to 80 cents per day, according to kind of work

performed. Wages are due and paid every Saturday. The customary hours of labor are from 7 to 11 a. m. and from 1 to 5 p. m.

(8) The common people subsist on a native dish called *sancocho*, composed of flesh, fish, or fowl, salted or fresh, and all sorts of vegetables boiled together, seasoned with parsley, mint, or other aromatic herbs, salt, and peppers. They have also salt pork or pork sausage, with boiled rice or beans, corn bread, cakes made from the casave plant, and coffee or boiled sugar-water. They have two meals per day, costing, on the average, 30 cents. The clothing consists of native straw hat, cotton shirt and pantaloons, and *alpargatas*, or sandals for the feet. They have four suits each per year, at a cost of \$3.50 per suit. The dwelling-houses consist of thatched mud huts, on the plantations free of rent; near the villages such houses rent for from \$2 to \$4 per month.

(9) The cost of labor, by the unit of customary measure by which products are sold, converted into terms of measure and currency of the United States, is as follows: An average day of work at coffee costs 7 pounds of coffee, or 60 cents; and an average day of work at sugar costs 5 pounds of sugar, or 60 cents.

(10) On this estate, from the cutting, selecting, carting, and grinding of the cane to boiling the juice and reducing it to *papelón*, or unrefined sugar, two tons per day can be made, at a cost of \$19 per ton. From the picking and drying to final preparation of coffee, the cost will average \$100 per ton.

(11) The customary mode of preparing agricultural products for the market is not essentially different from that generally practiced, and hence no details in reference to the same are deemed of interest.

(12) There are no local or national taxes, and the importation of agricultural products is generally prohibited.

(13) Sugar is seldom or never exported. The coffee goes to the United States (1,850 miles), at a cost of \$7.50 per ton, and to Europe (4,080 miles), at a cost of \$11 per ton. It pays an export tax of \$8 per ton, and is nearly all shipped by steamers.

COST OF LIVING.

(14) It should be generally observed that the cost of those articles that Americans consider as prime necessities of living are almost one hundred per cent. dearer here than in the United States. This is the natural result of the excessive import duties on flour, corn, lard, &c. Even sugar, that may be considered a spontaneous product of the soil, and the importation of which is expressly prohibited, is sold here at 12½ to 15 cents, while a fairer article may be had in the United States at half of that price. With a sea full of the choicest fish at our very doors, the price of the article is steadily maintained at 15 cents per pound. With excellent localities for good market gardens and a climate adapted to the raising of the best vegetables of the leading varieties at all seasons, the beggarly array of stunted and wilted garden products daily seen in the public market disgusts the appetite and defies description. The prices, too, at which this miserable stuff is sold are usually thrice as dear as in our own country. The poor, skinny beef that hangs suspended in every stall, for which the venders, having a monopoly of the business, demand 15 cents per pound, causes the American to sigh for the juicy steaks of his native land. And so this veritable relation might be continued to the end of the chapter, embracing every article of food or apparel for man or beast. The cost of living, therefore, it must appear, is excessive, so much so that, to speak practically, the meager

fare of a third-rate boarding-house in the United States, at the rate of \$15 per month, would cost here, if possible to duplicate it in kind and quality, fully twice that sum. Rents also, by similar comparison, are very high, since it is found that houses that command a monthly rental of forty or fifty dollars in American gold are not as comfortable and convenient as houses in the city of Philadelphia that are rented at one-half the price stated.

THE WORKING CLASSES.

In referring to the habits of the working classes it is thought not improper to repeat what has been observed in a former article. Their habits are fairly good in most respects except as to steady and faithful labor. By nature and habit they are not industrious; nor, without intelligent and watchful direction, can they be trusted to accurately and promptly perform any particular service. They are shiftless and time-serving, and totally lacking in the persistent energy and plodding patience that characterize our farmers and laborers. They study the Church calendar; they observe, with sportive *vagamunderia*, the oft-recurring feast days peculiar to all Catholic countries; they delight to spend their Sabbath evenings at the gaming-table, the cock-pit, the bull-fight, the theater, or the ball; their religious enthusiasm, political zeal, and patriotic fervor are alike manifested by blazing rockets and noisy fire-crackers; and their saints' days, baptisms, and carnival festivities are all redolent with the odor of cigarettes, burnt powder, and aguardiente. They live in the to-day, and take no thought of the duties or responsibilities of the to-morrow. They have no just appreciation of the institution of marriage, yet, for the most part, they are faithful in their attachments and happy at home. The poorer classes live on fruits and vegetables, with now and then a little beef or fish, and, though enveloped in squalor and poverty, seem to defy famine. Their clothing, in harmony with their perennial summer weather, is always of coarse cotton fabrics, and consists of pantaloons and blouse only, with native straw hats, and leather sandals. It is but just to add, however, that they are remarkably free from drunkenness and singularly exempt from crime, in these respects comparing most favorably with any communities in our own country. In searching for the causes that affect their habits as thus stated, it may be concluded that the delicious climate and spontaneous fruits of the soil combine to enervate them, while their filial respect and reverence for the priest and the church, coupled with a lively terror of the arbitrary and cruel punishments inflicted by the law officers, exercise the most powerful restraints over them. They seem to be a contented people, devoid of aspirations and ambitious, with simple wants readily gratified and few desires easily satisfied. Their houses are generally rude structures of adobe, with thatched roofs, and without window, chimney, or door-shutter, to which the cats, dogs, pigs, and chickens have free access. A wick in a pan of grease serves for a lamp. An iron pot with some charcoal is a fair kitchen outfit. An inverted flour-barrel serves for a table, and some boards or poles, overlaid with straw, suffice for a bed. They pay no local or general taxes, and their civil and political rights, though not questioned, are rarely exercised. They do not misconstrue liberty for license, nor, presuming upon fancied equality, intrude themselves upon the presence or attention of others. They are, in a word, polite and hospitable, though poor and ignorant. The system of popular educa-

tion, at the cost of the state, inaugurated by General Antonio Guzman Blanco, the recent President of Venezuela, is viewed with much favor by all classes, and its fruits are already observed in the rising generation. And to the reflecting mind the conviction occurs that peace and law, with the blessings of prosperity and happiness, must come through the beneficent channel of popular education.

WINFIELD SCOTT BIRD,
Consul.

UNITED STATES CONSULATE,
La Guayra, September 14, 1885.

CULTIVATION OF COFFEE IN SAN SALVADOR.*

BY A PLANTER.

DESCRIPTION OF LAND.

The coffee tree readily adapts itself to a variety of soils, vastly different as regards chemical composition. On this estate there are plantations of coffee trees on four various soils:

- (1) Dark red or chocolate-colored loam without sand.
- (2) Black loam.
- (3) Black fiber loam with large quantity of sand.
- (4) A heavy but friable white earth, the composition of which I do not know.

All these soils seem suitable to the tree; but their respective merits I should place as in the order named. The peculiar merits of the first-named soil would seem to be that it produces a very luxuriant tree of great vigor and large leaf of a darker color than ordinary, and although the berries are exceedingly large and close-grained, yet the trees are not large crop-givers, a fact to my mind of great advantage where a continuance of good average crops is looked for. The other soils are all good, although the last named produces an excessive quantity of coffee, to the detriment of the continued vigor of the tree, a drawback which should be counteracted by the plantation being thoroughly shaded, otherwise the coffee will fail to ripen and much be lost.

As a rule, in this Republic the subsoil consists of volcanic gravel with decomposed pumice stone below it, which forms a very good drainage; but in some parts a very tenacious clay is found within a very few feet of the surface. Such should always be avoided by the coffee planters.

It is most important to have well-drained land, for much as the coffee tree enjoys water, it cannot endure stagnant water around its roots, and if such remain the tree will quickly rot away and be lost.

LAY OF LAND.

(1) If plantations are to be made under forest (the best method of all) or on well-shaded land, choose gently-sloping land facing the north-east or due east.

(2) If under the sun or on only partly shaded land, then choose exactly the opposite position, viz, southwest, and plant on a steep decline.

*Transmitted by Consul J. Maurice Duke, of San Salvador.

(3) If flat land without shade is to be planted, then drain it well and plant bananas in the same lines as the coffee, leaving the passage between the rows of coffee free for the use of the plow and weed-destroyer.

In all cases avoid positions exposed to any concentrated force of wind, such as a hill at the end or between any narrow defile or valley. Wind is most beneficial to the coffee tree if not of hurricane force.

CUSTOMARY TENURE OF LAND.

It is not customary to lease land in this Republic, there being, I believe, very few instances of such a practice. At the same time, if persons presented themselves desiring to lease coffee estates, I have but little hesitation in saying they would find no difficulty in obtaining the lease of any number they might require, and I cannot think otherwise but that if many of the estates now to all intents and purposes abandoned were leased on a low rental to intelligent men they would produce a handsome profit, for there are few fruit trees that can be so readily repaired and brought into profitable crop-givers as the coffee tree.

There are at this present time very first-rate opportunities offering to men of industry and sobriety who will put a little intelligent work into the land; men of this description with a moderate capital of, say, five to fifteen thousand dollars, are the men required here; at the same time others with a much smaller capital have very great advantages of making money from the outset; but those who come merely seeking work will find themselves hopelessly miserable.

CUSTOMARY RENT OF LAND IF WORKED UNDER LEASE.

There is a custom on most large farms of giving out any spare land that is subsequently to be brought under cultivation to any respectable man asking for it.

Land so loaned is usually only for one crop, the owner then requiring it back in a clean condition, the only payment required.

GENERAL CONDITIONS OF LABOR.

The laboring classes, as met with within a reasonable distance of the larger towns and estates, leave little to be desired, in my opinion.

The people are ignorant of the use of scientific agricultural implements; this cannot be wondered at, for, as a rule, I think the greater number of the planters, both of coffee and sugar, and I may include maize, beans, and tobacco, are equally ignorant with their work-people, who are for the most part an industrious, sober, and peaceable set of men and women, content with small pay and working well for it. Labor is very fairly plentiful, it seldom being necessary to hunt up work-people for an estate well and justly managed.

One great drawback to the advancement to a more practical knowledge among the workers is that they are not content to settle down for any length of time in one place, but are constantly on the move, working here one, two, or three weeks, and then passing on to another estate; in this way to attempt to teach them new methods proves labor thrown away, as when, perhaps, fairly initiated into the use of the plow or pruning, or systematic cultivation of the soil, they suddenly leave and

the labor is lost. Not even high wages will retain them on a farm. On Monday morning the administrator proceeds with his list of work to be carried out during the week, and at bell-call all men desiring to be engaged present themselves, and are divided off under different headings of work, some few being retained as day laborers to do any necessary odds and ends that cannot be given out as task-work.

On completion of the list the foreman and subforeman proceed to the plantations with the men and lot out to them their task-work, which is measured off to them, the size of the task being left to the judgment of the head foreman and administrator, and, of course, varying considerably in accordance with the description of work to be done.

The general basis taken is that a man working hard from 6 a. m. till 5 p. m. would be able to accomplish a task and a half (24 square yards); correct judgment in giving out tasks can only be obtained by experience in similar work previously.

On every estate there are employed regular men by the month, and these are generally selected after having shown a disposition to settle down on the farm. For instance, a head foreman and second are necessary, a cattle-man, a house servant, a stableman or two, a cook, and pruners, when obtainable.

The women are first-rate field workers, and it is a pity greater encouragement is not given to them, for they would be very capital labor to obtain in many instances where men are too clumsy.

DESCRIPTION OF TOOLS AND MACHINERY.

The only agricultural implements used or understood by the native are the large hoe, the bill-hook, and the long knife, or *machete*, as they term it. With these they work very cleverly, which at best are but poor tools.

The native plow is merely a triangular piece of iron, about four inches broad at the base, fastened to a pole, and with oxen the point of this rude implement is run through the land to the depth of about three inches, being perfectly valueless as a soil cultivator. Such labor-saving machines as seed-sowers, harrows, rakes, plows, &c., are almost unknown, much as they are needed.

The dispulper is the first machine that comes into requisition; there are but few varieties of this machine, all being more or less made on the same principle. The best, so far as my experience goes, is that made by John Gordon & Co., and composed of a cylinder of iron covered with a punched copper sheet resembling a large nutmeg grater revolving against an iron breast-plate at such a limited distance as to allow the ripe coffee berry to be gripped by the grater and the skin torn off, while the inner shell falls through holes in the plate and passes to the washing and fermenting tanks.

The other processes in which machinery is used are performed by various patent machines, the principal being J. Gordon & Co.'s iron trilla, in my opinion the best, but by no means perfect. Another is "Mason's" large huller, a cylinder fitted with soft steel plates revolving against galvanized-iron netting at such a distance as to break and tear off the dry husk. Another, the "Vera Cruz," a clever little machine, composed of a series of little beaters fitted with steel spikes on the under side which work rapidly on a steel band which carries the coffee and passes under them. Another has lately been introduced here, the "Smout," which is a very simple machine and works fairly well. But as yet there is no machine that will thoroughly clear the bean of the

husk without either heating the berry in the process or without grinding the dust into the berry, thereby causing it to lose its natural blue tints which it would preserve when properly prepared. We are still looking for a more perfect machine. From all these machines the coffee passes through a ventilator and then to the polisher, and lastly to the separator, which is a revolving wire sieve which divides the coffee into four classes or rather sizes, after which it passes to the hand cleaners, and is then soaked and ready for shipment.

WAGES AND HOURS OF LABOR.

To give any correct idea of the cost of labor on a coffee plantation, I will divide as simply as possible the labor under its various headings:

- (1) Work done by task is paid at 30 cents each task.
- (2) Day laborer, 6 a. m. to 5 p. m., 30 cents.
- (3) Labor by month, \$8 to \$10.
- (4) Foreman, first, \$20 to \$30.
- (5) Foreman, second, \$12.
- (6) Cattle-man, \$10.
- (7) Cook for private house and to cook for artisans and regular servants, \$8 to \$10.
- (8) House servant (man), \$8.
- (9) Administrator of large estate, \$80 to \$100.

The whole are supplied with food, artisans and regular servants receiving meat, rice, cheese, and coffee.

The system that has been and is still in vogue in these Republics, of advancing money to work-people on account of work to be done, in an indiscriminate and careless manner, has done much harm to both workmen and master. In nearly all cases the master loses both his money and workman, while the money advanced is spent by the latter in some game of chance or in drink, and when the man finds he has to work without receiving any pay to support his family or the option of running away to another farm to find the needful, the latter course is usually taken advantage of as best suiting his pocket.

For three years I have entirely stopped all such loans in advance, so far as this farm is concerned, and with exceedingly satisfactory results, as now men that owe to other farms, rather than go there and pay off their debts by work prefer to come here and get paid regularly for labor done. Consequently I now find a larger number of work-people presenting themselves, instead of a smaller, as was predicted when I started the system.

Day by day all accounts of persons working on the farm should be duly noted down, and any defalcations, either for bad work or absence, should be noted against the man's name, and on Saturdays be duly reckoned for when paying.

Saturday morning should be employed by the foreman and administrator in receiving from the men all the tasks completed, the administrator every here and there requiring the tasks to be measured before him, so as to keep a check on any collusion arising between foreman and workman.

After receipt of all work performed by task the tools are received into the store and about 3 o'clock payment is made to the men.

Day labor is from 6 a. m. to 5 p. m.; task labor, any hours the men choose, except where wanton idleness is seen; then the man's food is stopped, and this quickly puts activity into his unwilling limbs.

SUBSISTENCE OF LABORERS.

The food served out to the ordinary workman consists solely of *tortillas* and *frijoles*, i. e., maize cakes and boiled black beans. The cakes are about the size of large cheese plates. In the morning he receives two cakes and as many beans as will cover one of them, and again the same allowance is served to him in the evening after work.

Women's rations are the same, only the cakes are of smaller size.

Before any food can be obtained from the kitchen, a medal has to be given by the head foreman, so that no man can twice receive rations; again, it places a check on the cooks, as so many medals produced have to represent so many tortillas and no more, so that the maize they received has to be accounted for. So much maize, viz, one Government measure, has to make twenty-five cakes.

The average cost of maize to an estate should not exceed \$5 a fanega, or twenty-four standard measures. Therefore,

	Cents.
Actual cost of maize per man per day	1.65
Cooking, tortillas, and beans per man per day	1.00
1 measure of frijoles feeds 50 men, and costs 50 cents, or per man	1.00
Cost fuel, lime, &c.....	1.00
Cost per man per day	4.65

Laborers always look for a farm well supplied with fruit trees, the produce of which they eat in great quantities and in a perfectly green state, which, however, seems to do them little or no harm.

CLOTHING AND HOUSING.

The clothing of the men consists, with few exceptions, of a common unbleached pair of calico trousers and a loose shirt of the same material, and usually they have two suits of these, and nothing else beyond a calico sheet to wrap themselves in at night; some of them have rugs, and the more careful of the men wear common colored cotton shirts and a coat of Guatemala cloth.

The women use colored prints for dresses, and are very particular that the prints are made in "fast colors."

The probable cost to an average workman for clothing during twelve months does not exceed \$10 to \$12.

No dwelling-houses or rooms an estate may possess are rented out. All are free to the work-people, but preference is given to a man with a family over a single man. During crop time the ground is covered in all directions at night with sleeping forms, and they seem quite content with their primitive dormitory.

IRON MINES OF SAN SALVADOR.*

BY AN OWNER.

We own an iron mine called the "Cobano." The ore is smelted in the furnaces of the "San José" smelting works, also our property; the distance between the mine and smelting works being 3 miles.

The mineral is extracted from near the surface only; the veins that go downwards are not followed, as that would cause expenses which at

* Transmitted by Consul J. Maurice Duke, of San Salvador.

present are unnecessary; consequently there are no shafts sunk nor galleries excavated. The land on which our mine is situated is a hill of about 50 acres in extent, on which veins are found on nearly all sides. The quality of the ore is of the best; carbonates and oxides of iron of 70 per cent. at least reduce the yield, on account of our very imperfect method, to only 30 per cent.

The mine has been worked for over a century, and we consider it inexhaustible. Even were the veins to give out, there are other hills close by in which the ore is found of the same richness.

SMELTING.

The process of smelting is the one called "Catalan," a method that has not suffered the slightest modification since the Spaniards first inaugurated it. The only machinery there is, is a water-wheel that works a hammer weighing about 9 or 10 hundred-weight, used to beat the iron into the shape in which it is sold, that of bars 3 inches wide by one-half inch thick.

WAGES OF LABORERS.

We must separate the employés of the mine from those of the furnace and hammer. The miners are simple peons, or laborers that work with picks and bars, &c., and who receive \$1.50 per week plus their board. As an economical measure we generally make contracts, paying at the rate of \$2 50 per ton for ore placed at the entrance to the diggings. The carriage from the mines to the furnaces costs us \$1 per ton.

Employés in the furnaces.—In each furnace it is necessary to have a master and assistant, who work night and day from Monday to Saturday, taking rest by turns, according to the phases that the smelting takes, which at times needs the vigilance of the master, and at others only that of the adjutants; each earns according to the quantity of iron turned out, the master at the rate of \$5.62 per ton of iron, and the adjutant half of that sum.

As the furnaces are independent of each other, any number can be established so long as there is sufficient water to produce the necessary amount of impelling force.

In the smelting works of "San José" we have three furnaces, and the employés there are six.

Employés at the hammer.—Four men are needed in this department of the works, a master and assistant for day work and the same number for night. These also do piece-work, earning according to the amount they turn out, the former \$6.88 per ton of hammered iron, and the latter \$2.50 per ton. The expense of making one ton of iron is, therefore, as follows:

To the master at the furnace	\$5 62
Assistant	2 81
To the maker at the hammer	6 88
Assistant	2 50
	17 81

To this must be added board, to which every man is entitled.

LOCAL TAXES, ETC.

There are neither local nor Government taxes, and the iron can be trafficked free of duty.

All the iron we work is consumed here at the rate of \$8 per quintal; this price rising at times to \$10. The purchasers dispose of it in various parts of this Republic and Guatemala and Honduras. It is employed entirely in the manufacture of machetes, axes, plow-heads, and other agricultural implements in use among us.

The great drawback to mining operations on a large scale is the lack of coal. Oak charcoal is the substitute here; most of the smelting works being in the vicinity of large oak forests.

The price of charcoal is 25 cents for about two bushels deposited on he premises, the purchaser himself providing mules for its transport.

AGRICULTURE IN THE BAHAMAS.

REPORT OF CONSUL M'LAIN.

Agriculture is an industry of very little importance, because the formation of the islands composing this group and the general character of the soil are not favorable to that pursuit.

The land is very rocky, the soil thin and sandy as a rule, and the surface very uneven and broken.

The tillable land is mostly held in fee simple, and generally in small tracts. There is considerable wild land still held by the Crown, which when sold brings from \$1.25 to \$2 per acre.

There is so little land under lease that there cannot be said to be any "customary rental" prevailing, special considerations fixing the price in most instances.

Labor is in the most primitive condition. There is no organized system at all.

The laborers generally own their small tracts, which they till at intervals between sponging, fishing, &c. The tools used are of the simplest character. The spade, hoe, pick, rake, machete, and ax are about all the tools a Bahamian farmer has any call for. With ax and machete he clears the brush; with pick, spade, and rake he will loosen the soil between the rocks for planting, and with the hoe he cultivates the plant and kills the weeds.

No machinery can be employed; the rocky land, the thin soil, and the broken surface all forbid it. In the cultivation of four-fifths of the tillable land even a common plow could not be used.

LABOR.

When laborers are hired by larger owners to till the soil, adult males receive an average rate of, say, 42 cents per day of nine hours; females receive an average of 33 cents per day; youths of both sexes about 12 cents per day, all without maintenance. They are paid partly in cash, or in provisions, or in kind.

The farm laborers live upon a simple diet, as do the working class generally. Their food is corn bread, grits or hominy, fish, and fruits.

Corn-meal costs 4 cents per quart; hominy 6 cents per quart. Fruits are abundant, most people raising their own. Fish are cheap. Meat is seldom eaten. Farm laborers are not fastidious in this regard; quantity rather than quality being the desideratum. A farm hand can live easily on 15 to 18 cents per day, having corn bread, grits, fish, and fruit.

In a climate where the thermometer seldom falls to 60°, but little clothing is required to protect from the cold, and yet so fond are these people of dress that they spend one-half their earnings in this direction. A woman earning \$100 a year would probably invest \$50 of it in clothing, where one-half that sum would suffice for decency and comfort.

The laboring classes wear cottons, prints, jeans, and straw hats; many on ordinary days wear no shoes at all. Cottons can be had for 9 cents per yard; prints for 8 cents; jeans and drills for 20 cents; shoes from \$1.25 to \$1.50 per pair, and other goods in proportion.

The houses occupied by these people are small, one-storied buildings, either of rough stone or wood, with wooden or thatched roof, containing from one to three rooms. They are generally owned by the occupants. When rented they bring from \$1.50 to \$3 per month.

EXPORTS, TAXES, ETC.

There is nothing of account shipped except oranges and pineapples. These are simply gathered, hauled in rude carts, and shipped as a rule in bulk, with no special preparation.

There is little here of local or direct taxation. Seven-eighths of the entire revenue of this colony is collected from licenses and from duties on imports. The tariff on some of the foreign imports is as follows:

Articles.	Duty.	Articles.	Duty.
Apples.....per barrel..	\$0 60	Flour, wheat*.....per barrel..	\$0 60
Beans and peas.....per bushel..	6	Flour, rye.....do.....	48
Biscuit and bread.....per barrel..	48	Hemp.....per 100 pounds..	28
Butter.....per pound..	4	Horses.....each..	4 80
Cattle.....each..	2 40	Lard.....per pound..	2
Cheese.....per 100 pounds..	2 40	Oats and bran.....per bushel..	6
Corn.....per bushel..	6	Vegetables.....per barrel..	28
Corn-meal and hominy.....per barrel..	48		

*And 10 per cent. ad valorem.

Otherwise generally 20 per cent. ad valorem duty.

Oranges and pineapples only in any quantity. Sent to the United States in sailing vessels generally. Cannot give any satisfactory estimate of cost, as the product is too perishable. A whole cargo may be rotted and no returns received.

THOS. J. McLAIN, JR.,
Consul.

UNITED STATES CONSULATE,
Nassau, N. P., September 22, 1885.

JAMAICAN NEGROES FOR THE PANAMA CANAL WORKS.

REPORT OF CONSUL BEYLARD

I report the following facts in connection with the "deportation of negroes from this island as laborers on the Panama Canal."

(1) The laboring classes, although amply compensated on this island, and receiving as they do wages varying from 50 per cent. to 100 per cent. in excess of those paid in England for the corresponding kinds of labor, have since the commencement of work upon the Panama Canal gone to the Isthmus in large numbers, where, owing to the great risk

attendant upon living in so unhealthy a climate, inducements have been offered to them which have proved irresistible, and the "Colon fever," as it is here termed, has from time to time attacked all those who could in any way secure means of transportation to this, to them, new Eldorado.

(2) Between the 27th of October, 1881, at which time a record of the exodus first began to be kept by the government, and the 31st of December, 1882, the departures from Jamaica to the Isthmus numbered 2,453. No record was kept of those returning from there during this time.

(3) In the following year, 1883, however, a very careful list of departures and arrivals was kept, and has been continued up to the present time, with the following results:

Period.	Departures.	Arrivals.
1883	12,348	4,903
1884	21,278	14,192
1885	14,791	12,738
1886*	5,086	3,127
Total	54,503	35,060

* June 30.

(4) So large a reduction in the number of the laboring population has of course affected the labor market, and, taken in connection with the low prices of sugar, at one time rendered the continuance of work on some of the sugar estates a matter of difficulty.

(5) The savings of these laborers are, however, to a considerable extent remitted or brought to Jamaica for investment in the government savings bank or in the purchase of land, so that it does not seem unreasonable to conclude that when the demand for labor on the Isthmus ceases many of them will return to settle down here as industrious citizens and small proprietors.

(6) Finally, I would state that, so far as it is possible for me to learn by careful inquiry, there is not, and never has been, any subterfuge or deceit used to induce these people to emigrate, the wages offered being quite sufficient to accomplish that end.

LOUIS D. BEYLARD,
Consul.

UNITED STATES CONSULATE,
Kingston, Jamaica, July 17, 1886.

THE COMMERCIAL MOVEMENT OF BELGIUM FOR THE FIRST FIVE MONTHS OF 1886.

REPORT OF CONSUL STEUART, OF ANTWERP.

GENERAL TRADE.

Tables of statistics just issued from the ministry of finance for Belgium, giving the commercial movement of the Kingdom with foreign countries for the month of May, 1886, and also a comparative statement of the same for the first five months of the years 1884, 1885, and 1886, show a decrease of 14 per cent. in the importations for the month of May of the present year, when compared with those for the same period of 1885, and a decrease of 9 per cent. in the first five months.

The exports for the month of May, 1886, have been 1 per cent. in excess of those for the same month of 1885, while the aggregate exports for the first five months of 1886 have been about the same as those for the same period of the preceding year.

Tables A and B show the increase and decrease by values of the principal articles of import and export for the first five months of 1886, according to their importance.

TABLE A.—Increase and decrease of value of importations into Belgium for the first five months of 1886, as compared with those of the same period of 1885.

Increase.	Amount.	Decrease.	Amount.
	<i>Francs.</i>		<i>Francs.</i>
Petroleum	4,389,000	Wheat, spelt and mealin	16,592,000
Cattle	4,070,000	Flax	4,105,000
Soda	2,454,000	Lard	3,972,000
Guano	2,143,000	Oil seed	3,813,000
Tobacco, leaf	1,843,000	Oats, corn, and buckwheat	3,423,000
Butter, fresh and salted	1,707,000	Wood, building	3,161,000
Hides, raw	1,645,000	Thread of flax or other vegetable fibers	1,698,000
Rice	1,601,000	Flour, bran, and meal	1,553,000
Potatoes	1,128,000	Woolen tissues	1,551,000
Hops	979,000	Wines	1,534,000
Tow	662,000	Barley and malt	1,120,000
Silk	543,000	Sirup and molasses	985,000
		Coal	963,000
		Coffee	904,000
		Sugar, raw	856,000
		Rye	844,000
		Sugar, refined	875,000
		Thread and yarn of wool and goat-hair	641,000
		Copper and nickel, unworked	629,000
		Mercery and hardware	546,000
		Lead, unworked	535,000

TABLE B.—Increase and decrease of value of exportations from Belgium for the first five months of the year 1886, as compared with those of the same period of 1885.

Increase.	Amount.	Decrease.	Amount.
	<i>Francs.</i>		<i>Francs.</i>
Sugar, raw	7,217,000	Thread of flax or other vegetable fibers	8,986,000
Textiles, raw, flax	5,467,000	Wheat, spelt, or mealin	5,853,000
Textiles, raw, wool	3,149,000	Railway and horse cars	4,121,000
Hides, raw	2,971,000	Rye	2,529,000
Tissues of flax, hemp, and jute	2,201,000	Tissues, light woolen	2,305,000
Glassware, common	1,989,000	Oils, vegetable, not alimentary	2,192,000
Textiles, raw, tow	1,880,000	Barley and malt	1,857,000
Rags	1,672,000	Petroleum	1,791,000
Meat	1,556,000	Flour, bran, and meal	1,362,000
Castiron, stretched and flattened (excluding sheets)	1,556,000	Lard	1,264,000
Steel bars, sheet or wire (excluding rails)	1,489,000	Steel rails	1,205,000
Horses and foals	1,246,000	Butter, fresh and salted	1,098,000
Machines (not of wood)	1,128,000	Oats, corn, and buckwheat	953,000
Mercery and hardware	902,000	Coal	757,000
Glassware, mirrors	922,000	Arms	668,000
Chemicals (excluding soda)	894,000		
Textiles, raw, silk	790,000		
Old iron	759,000		
Iron in sheets	505,000		

TRADE WITH THE UNITED STATES.

IMPORTS.

In a number of the above-mentioned articles of commerce the United States are directly interested, and the most important of these is wheat. The aggregate importation from all countries into Belgium, for the five months, of this article amounted to 215,288 tons, against 294,300 tons in 1885, which is a decrease for the present year of 79,012 tons, the importations from the United States having fallen off 23 per cent., and those from Russia even 70 per cent.

There has been a decrease of 5,029 tons in the total importation of rye, the aggregate receipts for the five months in 1886 amounting to 22,873 tons. The United States brought only 2½ per cent., against 5½ per cent. in 1885. The five months of this year and of 1885, when compared with the same period of 1884, show a very large decrease, 44 per cent. of the total importation having then come from the United States.

The total receipts of corn, oats, and buckwheat amounted to 67,780 tons, against 86,793 tons in 1885, a decrease of about 22 per cent. for 1886, while the importation of this merchandise from the United States has increased from 6½ per cent. in 1884 to 2½ per cent. in 1885, and to 3½ per cent. for the present year.

The total importation of flour, bran, and meal has decreased from 16,656 tons in 1885 to 13,127 tons, the United States having also had their part in this decrease; the falling off has been from 20½ per cent. in 1885 to only 6 per cent. in 1886.

Seven thousand five hundred and thirty-two tons of peas, lentils, and beans were received, an increase over 1885 of about 600 tons. Only a very small quantity came from the United States, 50 per cent. having been furnished by Holland, 20 per cent. by Germany, and 15 per cent. by France.

The importations of meat aggregated 5,021 tons, showing only a slight decrease when compared with 1885. Sixty four per cent. of the total quantity was furnished from the United States.

Nine thousand nine hundred and two tons of lard, about 33 per cent. less than in 1885, were received. This decrease is due to the falling off of the importation from the United States, there having been 7,315 tons in 1885, against only 4,964 tons in 1886.

Of starch, 1,597 tons were imported, an increase of 126 tons over 1885. The increase in the importation of this article from the United States has been particularly large, having attained 128 tons in 1886 against 67 tons in 1885.

The importation of rice amounted to 28,315 tons, being an increase over 1885 of 8,000 tons. Very little of this was received from the United States, nearly all having come from East India and Holland.

In the total importation of oil-seed, amounting to 40,651 tons, there has been a decrease, as compared with 1885, of 25 per cent., while in the importation from the United States a large increase is marked, 3,288 tons in 1886 against 1,862 tons in 1885, and 109 tons in 1884. There has been a decrease in the importation from British India and South America.

The total receipts of petroleum, for the first five months of the present year, aggregated 64,629 tons, against 41,287 tons for the corresponding period of 1885, and 41,753 tons for the five months of 1884. While only a slight difference is marked, as regards the importation of 1884 and 1885, an increase of over 50 per cent. is shown for 1886. Of the entire importation of the present year 88 per cent. was from the United States and 11 per cent. from Turkey. This is a large increase for Turkey, when compared with 1884, when only 60 tons, and with 1885, when about 1 per cent. was received from there, and 98 per cent. from America.

The total importations of rosin and bitumen were 37,321 tons, about 100 tons less than in 1885, while the decrease in the receipts from the United States has been more marked, they having been 13 per cent. last year, while they amounted to only 4 per cent. this year.

The receipts of coffee show a slight decrease for 1886, when compared with 1885, but an increase of 100 per cent. when compared with 1884, the importations having augmented from 5,437 tons in 1884 to 10,954 tons in 1885, and 10,599 tons in 1886. The United States furnished only 3 per cent. of the quantity in 1886 against 6½ per cent. in 1885. Brazil and Holland brought about 30 per cent. each, and France 33 per cent.

Of leaf tobacco, 3,380 tons have been received in 1886, which is an increase over 1885 of 1,085 tons. The United States furnished 50 per cent. of the total importation in 1886, and 36 per cent. in 1885. Of the cigars imported—23 tons—5.8 came from the United States, 4.9, from Holland, 3.8 from France, 3.5 from England, and 3.4 from Germany.

The importations of sirup and molasses show a large falling off, there having been only 5,481 tons against 10,956 tons in 1885, the decrease in the receipts from the United States having been equally large proportionally, from 3,499 tons in 1885, to 1,220 tons in 1886. The importation from Holland has also decreased from 4,151 tons in 1885, to 960 tons in 1886.

Raw hides have been received 15,276 tons, a slight increase over last year. The United States furnished very little of this merchandise, only 2½ tons this year, and 117 tons in 1885. About two-thirds of the entire importation came from La Plata and Uruguay. France furnished 1,750 tons and England 1,036 tons.

The importation of prepared, dyed, and varnished hides (including furs) has been about the same as last year—392 tons—of which France brought 158 tons, and England 128 tons, while nothing in this line has come from the United States.

Of vegetable alimentary oils 891 tons, nearly the same quantity as the year preceding were received, 80 per cent. from France, and none from the United States.

Of other vegetable oils 8,865 tons, 500 tons less than in 1885, were imported, the United States having furnished 1,093 tons in 1886, and 1,431 tons in 1885.

In the importation of raw cotton there has been an increase over 1885 of 60 per cent., there having been 10,435 tons this year. The statistics do not specify the different countries of origin or shipment, but undoubtedly a large part of the importation was from the United States.

The importations of wool aggregated 26,242 tons, a marked decrease when compared with the preceding year, when 40,578 tons were received. The statistics do not specify the quantities received from each of the different countries, but it is known that the largest part of this merchandise has come from South America.

Salts of soda were received to the amount of 6,229 tons against 6,818 tons in 1885. The United States sent only 25 tons in 1886 and 184 tons in 1885, Germany 2,106 tons, Holland 1,444 tons, and Russia 1,063 tons, this year.

The importation of wood for building purposes amounted to 123,247 cubic meters, which is a decrease as compared with 1885 of 42,961 cubic meters. The decrease in the importation from the United States has been particularly large, only 7,355 cubic meters having been received in 1886, against 10,768 in 1885.

Arms were brought into Belgium to the value of 810,213 francs, which is an increase over the five months of the preceding year of 324,000 francs or 45 per cent. The value of arms received from the United States was 23,010 francs, against 19,539 francs in 1885, an increase of 18 per cent. for the present year. France, England, and Germany furnished about 75 per cent. of the entire importation, in nearly equal parts.

Two thousand six hundred and seven tons against 2,893 tons in 1885 of unworked copper and nickel were imported, showing a slight decrease for the present year. The United States bought 543 tons this year and 687 tons in 1885, showing a falling off of over 20 per cent.

The following kinds of fruit were imported into Belgium: Almonds, 112 tons in 1886 against 134 tons in 1885; lemons and oranges, 2,759 tons against 2,532 tons; figs, 1,158 tons against 840 tons; prunes, 481 against 545 tons; currants, 509 against 781 tons; other dried fruit, 289 tons against 387 tons; only in these last-named the United States were interested, having brought 62 tons in 1886, which is a remarkable falling off as compared with the corresponding five months of 1885, when 161 tons were received.

In the importations of the articles of commerce named below, the United States have not been interested. The first five months of the present year compare with the corresponding period of 1885 as follows:

Articles.	1886.	1885.	Articles.	1886.	1885.
Cattle head ..	175, 000	165, 000	Potatoes tons ..	30, 307	11, 507
Hogs do ..	22, 517	15, 664	Eggs pieces ..	52, 128, 000	50, 936, 000
Horses do ..	6, 218	6, 285	Fish (excluding those in shells) tons ..	6, 790	6, 802
Raw sugar tons ..	4, 305	5, 938	Salt, raw do ..	29, 568	17, 527
Refined sugar do ..	482	1, 644	Refined salt do ..	12, 358	11, 291
Guano do ..	15, 350	8, 207	Rags do ..	6, 799	7, 078
Pottery, common do ..	790	788	Cotton thread do ..	465	384
Crockeryware and porcelain francs ..	468, 000	507, 000	Woolen yarn do ..	280	353
Chemicals (excluding salts of soda) francs ..	6, 994, 000	6, 644, 000	Thread of flax and other vegetable fibers tons ..	1, 558	2, 073
Tissues of cotton do ..	1, 106	1, 090	Clothing francs ..	3, 287, 000	3, 916, 000
Tissues of wool do ..	8, 413, 000	9, 696, 000	Musical instruments do ..	432, 583	374, 000
Tissues of flax, hemp, and jute francs ..	452, 000	409, 000	Brandy (at 50 degrees and over) hectoliters ..	5, 290	5, 284
Tissues of silk tons ..	61	63	Railway and horse-cars tons ..	188	44
Laces of silk and cotton francs ..	463, 000	561, 000	Machinery do ..	4, 534	4, 546
Tanners' bark tons ..	3, 854	2, 993	Iron ore do ..	573, 379	557, 000
Hops do ..	1, 220	495	Tow do ..	6, 906	6, 397
Glass, common bottles do ..	1, 030	1, 166	Flax, raw do ..	11, 412	14, 060
Mirrors francs ..	14, 800	46, 000	Silk, raw do ..	64	56
Window glass francs ..	13, 000	12, 000	Mercery and hardware tons ..	4, 327	4, 873
Ordinary glassware do ..	307, 000	329, 000	Steel, unworked do ..	840	1, 414
Good quality glassware francs ..	14, 000	25, 000	Steel, worked do ..	76	105
Vinegar hectoliters ..	14, 650	14, 656	Iron tons ..	32, 147	46, 568
Wine do ..	78, 000	93, 000	Manufactures of iron do ..	1, 805	1, 658
Beer do ..	42, 000	42, 000	Lead, unworked do ..	1, 485	2, 459
Candles francs ..	158, 000	152, 000	Zinc, unworked do ..	790	732
Chocolate tons ..	91	116	Paper do ..	2, 216	1, 891
Coal do ..	431, 000	503, 000	Tiles and slate for roofing purposes tons ..	11, 164	13, 612
Cokes do ..	8, 266	8, 546	Stones, rough-sawn or cut tons ..	21, 097	22, 038
Butter, fresh and salted tons ..	8, 984	3, 374	Books do ..	271	286
Grains and peeled barley tons ..	1, 442	1, 301	Other typographical productions francs ..	716, 142	525, 000

TABLE C.—*Direct importations from the United States into Belgium for the first five months of the years 1884, 1885, and 1886.*

Merchandise.	1886.	1885.	1884.
Arms	frances.. 23, 000	20, 000	23, 000
Coffee	tons.. 413	683	291
Copper and nickel	do.. 543	687	170
Flour, bran, and meal	do.. 138	780	2, 434
Fruit, dried	do.. 62, 000	161, 000	5, 000
Grain:			
Wheat	do.. 70, 646	91, 511	108, 885
Rye	do.. 493	1, 463	26, 617
Corn and oats	do.. 24, 754	23, 622	4, 744
Hides, raw	do.. 2	117	125
Lard and tallow	do.. 4, 964	7, 315	3, 160
Meat	do.. 3, 171	3, 147	1, 681
Oil	do.. 1, 098	1, 430	1, 081
Oil-seed	do.. 3, 288	1, 862	109
Peas and beans	do.. 1	10	1
Petroleum	do.. 56, 996	40, 346	40, 802
Rice	do.. 1	1	1
Resin and bitumen	do.. 3, 134	4, 876	6, 664
Starch	do.. 128	67	33
Sirup and molasses	do.. 1, 229	3, 499	719
Tobacco:			
Leaf	do.. 1, 632	831	249
Manufactured	do.. 5. 8	5. 7	5. 7
Wood for building	cubic meters.. 7, 336	10, 768	7, 825

TABLE D.—*Direct exportations from Belgium to the United States for the first five months of the years 1884, 1885, and 1886.*

Merchandise.	1886.	1885.	1884.
Arms	frances.. 248, 000	256, 000	458, 000
Books	kilos.. 614	2, 138	5, 348
Chemicals:			
Soda	tons.. 25	184	83
Others	tons.. 562	333	167
Clothing	frances.. 789, 000	761, 000	704, 000
Eggs	pieces.. 1, 836, 000	2, 460, 000	288, 000
Glass:			
Common bottles	tons.. 1	14	32
Mirrors	frances.. 557, 000	451, 000	139, 000
Window	tons.. 9, 891	8, 785	15, 311
Ordinary ware	tons.. 283	165	56
Herring	kilos..	9, 648	510
Hides:			
Dyed, varnished, and prepared	tons.. 44	19	78
Raw	tons.. 150	106	446
Iron:			
Bar	tons.. 2, 966	1, 073	90
Cast	tons.. 651	...	...
Old	tons.. 4, 356	300	140
Rails	tons..	...	5, 960
Wire	tons.. 62	100	120
Wrought	tons.. 92	149	3
Laces	frances..	13, 700	3, 500
Lard and grease	tons.. 447	252	185
Machinery	tons.. 80	85	177
Paper	tons.. 16	26	25
Potatoes	tons.. 20	67	94
Rags	tons..	244	664
Resin and bitumen	tons.. 1, 038	198	360
Steel:			
Bars, sheets, or wire	tons.. 6, 526	19	1, 567
Cast	tons.. 705	...	...
Rails	tons.. 332	4, 258	1, 300
Sugar, raw	tons.. 5, 957	3, 124	1, 630
Tissues:			
Cotton	tons.. 7	51	42
Flax, hemp, and jute	tons.. 69	15	1
Silk	kilos.. 319	190	...
Wool	tons.. 370	23	...
Wool, raw (of foreign origin)	tons.. 483	219	...
Zinc, not worked	tons.. 283	83	...

CUSTOMS DUTIES.

The customs duties collected in Belgium during the first five months of 1886 amounted to 11,076,970 francs against 11,652,331 francs collected for the five months of the preceding year, and 10,050,060 francs for the corresponding period of 1884.

JOHN H. STEUART,
Consul.

• UNITED STATES CONSULATE,
Antwerp, July 22, 1886.

SUGAR TAXATION IN GERMANY.

REPORT OF CONSUL-GENERAL RAINE, OF BERLIN.

The new sugar-taxation law, lately passed by the German Reichstag, has been officially promulgated.

From August 1st of this year the beet-sugar tax will be 1 mark 70 pfennig per 100 kilograms of raw beets, to be used for sugar. The export reimbursement will be, for 100 kilograms, as follows: (a) raw sugar of at least 90 per cent. polarization, and refined of between 90 and 98 per cent., from August 1, 1886, to September 30, 1887; 18 marks and 17.25 marks afterwards; (b) for candies, and for sugar in white, full, hard loaves, blocks, plates or bars, or pounded in the presence of the tax authorities; also other sugar of at least 99½ per cent. polarization to be fixed by the Bundesrath (federal council), from August 1, 1886, to October 31, 1887, 22.20 marks and 21.50 marks afterwards; (c) for all other hard sugars, and all white dry sugars (not containing over 1 per cent. of water) in crystal, crumb, or flour form, of at least 98 per cent. polarization, so far as they do not come under b, August 1, 1886, to October 31, 1887, 20.80 marks and 20.15 marks afterwards.

Credit may be allowed to beet-sugar manufacturers in respect of taxes to the extent of six months.

F. RAINE,
Consul-General.

• UNITED STATES CONSULATE-GENERAL,
Berlin, June 19, 1886.

GERMAN TRADE COMPETITION WITH ENGLAND AND FRANCE.

REPORT OF CONSUL GOODWIN, OF ANABERG.

Even amidst the turmoil of an unusually exciting political campaign the leading newspapers of London and Manchester find time to watch the experiment which Germany has undertaken, viz: to compete with Great Britain and France for the trade of Eastern Asia and Australia.

GERMAN STEAMSHIP LINES.

The first steamer of the new subsidized German line sailed from Bremerhaven on the 30th of June, bound for Shanghai and Hong-Kong. Since that date, on the 14th of July, a second ship has been dispatched, this one to Melbourne and other Australian ports. The projectors of this German line were engaged a long time in maturing their plans, and they

finally arranged a very ingenious time-table, providing for trips of the German steamers, carrying passengers, mail, and freight, to be made at intervals of fourteen days, and between the trips of the existing English and French lines. The pioneer of the line, which, as before mentioned, sailed from Bremerhaven June 30, was expected to get away from Suez July 17, and the first Australian steamer, which left Bremen July 14, is booked to sail hence from Suez August 2. This arrangement admits of a connection at Suez with steamers from Trieste, Brindisi, and Alexandria, and arrangements have already been made for this connection, the steamers to leave Trieste every second Wednesday and Brindisi every second Friday.

The German line has not only the advantage of running its ships at dates between those of its two great competitors, and of having new and important connections, but it has put into service large and powerful ships that are calculated to make quicker runs than have yet been made. For instance, the English ships make the trip from Suez to Hong-Kong in twenty-eight and one-quarter days, the French in twenty-eight days, while the German ships are confidently expected and billed to make it in twenty-four and one-half days. The English ships now make the run from Suez to Melbourne in thirty-three days, the French in thirty-five days, and the German ships are to do it in thirty and one-quarter days. In correspondence with the main lines, steamers have been provided to connect at Hong-Kong with Yokohama, Hiogo, Nagasaki, and other Japanese ports, and at Sydney for the Tonga and Samoan Islands, and probably, later on, for New Guinea. The ships on these branch lines are to be especially adapted to this work, capable of quick time and sure connections. On the return the German ships are booked to sail from Shanghai and Hong-Kong one day later than the French boats and to arrive at Suez at least two days ahead of them; the German ships will leave Sydney one day later and Melbourne two days earlier than the English ships, and will reach Suez fully five days in advance of them. Not only is it promised that the German ships shall make quicker runs than have ever been made by their rivals, but the rates for passage have been placed at lower figures, and are as follows:

Bremen to—	First class.	Second class.	Third class.
Port Said	\$95 20	\$57 00	\$23 80
Singapore	321 30	192 50	81 00
Hong-Kong	368 90	214 20	93 00
Nagasaki	447 50	264 00	112 00
Adelaide	285 60	166 60	54 75
Sydney	321 30	190 40	59 50

On round-trip tickets a reduction of from 25 to 33½ per cent. is made.

TRADE WITH THE EAST.

It is not strange that England and France, particularly the former, look with jealous eyes upon this bold and well-considered move on the part of Germany to secure a share of the trade with China, Japan, and Australia. I have at hand no fresh statistics of England's trade with the former countries, but, as everybody knows, it is enormous and profitable. The Germans are just now very active and very shrewd in their efforts to undermine English trade and influence in China.

Scores of contracts have already of recent date been given to Germans by the Chinese, the most notable being the contracts to build

large iron-clads for the Chinese navy. These latter were secured through the persistent efforts of the German consuls in China, and as the result of instructions from their Government. They were contracts such as heretofore have fallen to England's lot almost without the slightest competition. German capitalists, with practically unlimited resources, are now in China negotiating for the building of the railroads projected in various parts of the Empire. In the expectation of building these railroads and equipping them from German workshops, and on account of the establishment of the new line of steamships to reach every important shipping point in Eastern Asia and Australia, Germany is now in high feather. England and France will do well to keep a sharp eye on Germany, as the latter is determined to eventually distance them both in the volume of trade with China. The Government, the societies of trade and commerce, and individual workers, are co-operating to that common end.

GERMAN AND AMERICAN TRADE IN CHINA.

It is a fact, shameful but true, that Germany will not have to work very hard to distance the United States so far as trade with China is concerned. Mr. A. A. Hayes, who has traveled extensively in China, and who, though now in the United States, keeps himself thoroughly informed upon Chinese matters, says, speaking of the trade of China with England and the United States:

Shanghai, as I have said, is a most important commercial city. From it are shipped the great bulk of the green-tea crop and the raw silk, besides large quantities of black teas and other native products. Figures convey little idea of such things to the general reader, but it will be well to mention that in a single year 2,111 foreign vessels, of an aggregate tonnage of 1,165,967, entered at this port; that foreign goods of the value of \$82,169,964 were imported, and native goods to the value of \$45,504,851 were exported. We have a bad habit in this country of indulging in singular delusions as to the share of this trade which belongs to us. Without going far into this unpleasant subject (which any one can study for himself), it may be said that American trade with China has been largely unremunerative for many years, and is growing worse and worse. It is not agreeable to be obliged to add that a very large proportion of the China teas marketed in the United States are purchased by Englishmen with English money, shipped in English vessels, and sold in this country by Englishmen for English account. I once wrote to a very enterprising British merchant in London, and asked why he did not avail himself of the cheapness of American cotton goods with us, and of money with him, and make some large shipments to China. His reply was, "Manchester, England, and Manchester, America, are all the same to me; but I am not an educator. My business is to supply what the Chinamen want. I send you a sample by book-post. If such goods can be produced with you a fraction of a farthing cheaper than with us, I will take one hundred thousand pieces." The manufacturers in New England turned up their noses at this sample, which was all very well; but at that time the English were shipping to Shanghai about the same quantity of piece goods in one week that we shipped in a year!

There are cotton manufacturers in New England to-day, notably the Pepperell Company at Biddeford, Me., which do a profitable business with China in cotton drillings. That concern has done a large and paying business with China in years when its home trade was dull and otherwise unsatisfactory. It has competed in open market with the manufacturers of Manchester, England, and vanquished them in spite of a high protective tariff. What the Pepperell, and, if I am not mistaken, the Hamilton Company at Lowell, Mass., have done other manufacturers might do, if the proper interest and energy were shown. There are reasons why England should do a larger business than the United States with China, but there is no reason why our trade should be, as Mr. Hayes says it is, "unremunerative, and growing worse and worse."

THE AUSTRALIAN TRADE.

Germany is also putting forth special efforts to get a stronger foothold in the Australias. It already has a large trade with these colonies, but its cup of ambition is not filled. American trade with Australia is reported to be very dull and is likely to remain so as long as we maintain the heavy duty on wool. England still does the great bulk of the business with Australia, about twenty times as much as is done by the United States. Only mixed cargoes, consisting of such articles as can be obtained at better advantage in the United States than in England, now go from the former to Australia, and the ships carrying those cargoes, having discharged at Sydney or Melbourne, reload for England more frequently than for the United States. The importance of Great Britain's trade with the Australian colonies cannot be overestimated, and at first thought the idea that Germany may reduce it to any considerable extent may seem absurd.

Her exports to and her imports from Australia during the years 1884 and 1885 were as follows:

Colony.	Exports.		Imports.	
	1884.	1885.	1884.	1885.
West Australia.....	£255,056	£275,411	£277,071	£312,535
South Australia.....	2,150,448	2,236,580	3,266,534	3,700,775
Victoria.....	6,653,157	6,680,731	7,684,979	6,174,546
New South Wales.....	8,402,228	9,106,828	9,041,738	7,851,822
Queensland.....	2,071,089	2,447,000	1,682,422	1,891,809
Tasmania.....	520,827	456,148	371,088	348,448
New Zealand.....	3,086,039	3,900,170	6,013,723	5,674,583
Fiji Islands.....	125,945	34,210	41,149	50,806
Total.....	23,875,406	25,147,178	28,879,814	26,115,534

Statistics covering the first month of the present year are also published, and they show exports to the colonies amounting to £1,450,600, a slight increase over the same month of last year; in the same month the imports from the colonies fell off almost £500,000. The chief articles of export are woolen and cotton goods, iron, machinery, thread, wire, clothing, hardware, leather, boots and shoes, beer, and paper; the leading articles of import are wool, wheat, meats, live stock, copper, tin, and tallow. In contesting for the Australian trade Germany has not acted hastily nor unadvisedly, but after careful preparation, as is the case with her efforts to gain trade and influence in China, Japan, and the islands round about them.

The French trade journals are awakening to the significance of the German moves, and are vigorously urging, as a first step to offset them, that a decided improvement be made in the steamship service now existing between France and Eastern Asia and Australia. Faster ships, lower rates for freight and passengers, and other changes are called for.

English journals are taking a pronounced interest in the movements of Germany, and politicians have referred to them upon the stump. The "London-China Telegraph," in a recent issue, voiced the prevailing sentiment in saying:

The Peninsular and Oriental Steam Navigation Company and the Messageries Maritimes will suddenly meet with a strong rival, whose aim is to compete with them on their principal routes, and promises from the beginning to provide a better

and cheaper service. We hear that five steamers will run on the Chinese route and three on the Australian; that in correspondence with the former there will be a line to Japan and Corea, and with the latter a line to Samoa. The distance between Bremerhaven and Shanghai and back will be covered in 110 days, and mails and passengers will be forwarded at least 4 days quicker than any other line. Freight will be carried cheaper than heretofore. This certainly is not a competition on which the shareholders of the English line can look with indifference. Another matter, and one of more importance than the completion for the ship-owners, is the increase of German competition with English manufacturers. The latter have already been overtaken by the former in the matter of cheap workmanship, and cheaper freights, quicker and better service, and united and persistent effort may make the work of maintaining English supremacy still more difficult.

GEORGE B. GOODWIN,
Consul.

UNITED STATES CONSULATE,
Annaberg, July 22, 1886.

COTTON MANUFACTURES IN THE GRAND DUCHY OF BADEN.

REPORT BY CONSUL MONAGHAN, OF MANNHEIM.

The Grand Duchy of Baden, covering a superficial area of 15,081 square kilometers, or 273.9 geographical miles, of which 84 per cent. is hilly and mountainous, contains the following cotton-manufacturing concerns:

Name of company.	Nature of operations, &c.	Hands employed.
Binninger	Weaving and dyeing	24
Constance	Weaving and printing	87
Constance No. 2	Weaving	2
Singen	Spinning	55
Arten	Spinning and weaving	450
Rietdorf	Spinning, weaving, and dyeing	74
Volkershausen	Spinning and weaving	208
Zizenhausen	Weaving and printing	71
Mühlhofen	Weaving	77
Moersburg	do	80
Homburg	do	26
Homburg No. 2	do	45
Triberg	do	13
Uehlingen	do	20
Oeffingen	do	101
Oeffingen No. 2	do	83
Kleinlaufenberg	do	06
Säckingen	do	110
Murg	do	350
Murg No. 2	do	20
St. Blasien	Spinning	212
Tadtmoos	do	28
Unterlauchingen	Spinning and weaving	118
Unterlauchingen No. 2	do	228
Thiengen	Spinning, thread, &c	61
Ruhswihl	Weaving	55
Unterenzingen	Thread	35
Oberbandringen	do	16
Freiburg	do	90
Freiburg No. 2	Weaving	30
Gutthenthal	do	46
Kollnau	Spinning and weaving	360
Waldkirch	do	50
Lörrach	do	160
Lörrach No. 2	do	80
Lörrach No. 3	do	110
Lörrach No. 4	Only printing	1,000
Hallstein	Spinning	92
Hallstein No. 2	Weaving	97
Haagen	Spinning	521
Steinen	do	240

Name of company.	Nature of operations, &c.	Hands employed.
Bombach	Weaving and bleaching.....	266
Zell	Spinning.....	70
Zell No. 2	Weaving.....	195
Todtnau	Thread.....	200
Todtnau No. 2	Weaving.....	40
Atzenbach	Spinning.....	442
Schönau	Spinning and weaving.....	440
Häg	Weaving.....	105
Schönau No. 2	Spinning.....	90
Präg	Weaving.....	40
Schopfheim	Spinning.....	169
Maulberg	Weaving.....	275
Wehr	do.....	290
Fahrnau	do.....	33
Tegernau	Thread, &c.....	20
Schaltern	Weaving.....	48
Schiltach	do.....	28
Offenburg	Spinning and weaving.....	410
Schangericht	Thread.....	82
Bühl	do.....	95
Ertlingen	Spinning and weaving.....	1,300
Frauenalb	Weaving.....	36
Total		10,156

Thus, out of a population of one and a half millions, 10,156 persons are engaged in the various employments necessary to marketing cotton cloth.

METHODS AND PROCESSES.

To one familiar with the magnificent concerns employed in the manufacture of cotton goods in the United States, a visit through the mills of Baden is very interesting and amusing.

In the manufacture of cottons the Germans are far behind Americans in men, methods, and machinery. One is surprised to find old machinery, rejected in America twenty years ago, used here to-day; to see work done by hand slowly that machines in America do infinitely better, quicker, and cheaper; to see girls doing work that men should do.

I visited the cotton-mills with a view of comparing. In the largest concern in Baden I went from the storehouse of raw cotton to the rattling looms, and found in the "picker room" eight machines doing the same work that four do in a United States cotton-mill; women doing the same work that men do with us. All the hands in the "picker room" were women with the exception of one. In the carding room are old machines, old methods. In the spinning room were 3, 4, and 5 girls doing what one little girl does in America, namely, here one little girl attends "two sides," and has work enough, on an old machine; with us a little girl tends 6, 8, or 10 "sides." Mule spinning room, a man 35 years, two young men 18 and 20 years of age, doing what one young man 18 to 20 may be found doing in every cotton mill from Rhode Island to Georgia, namely, tending one pair of mules as large as William Mason's single or Parrburte's English mules. These three persons together get about the same pay as the young man in America, namely, 2½ marks to the man, 1½ each to the young men, making, in all, about \$1.35 per day. In the spooling and warping rooms, old machines. Here also one may see young women making harnesses for the looms by hand. Most of the machinery is of old English make.

THE CLASS OF "HELP."

The help are all Germans; range in years from thirteen to fifty years. They were apparently rugged and healthy. They work about twelve

hours per day. These hours are broken up in such a way as to be conducive to the people's health; for instance, a quarter of an hour at 9 o'clock a. m. for a lunch and mouthful of fresh air, "dinner time" 12 m., and again lunch of black bread and fresh air at 4 p. m. They go into the mills at 6 a. m. and get out at 7 p. m. You will observe that this industry is scattered over the land; just the opposite to the American manufacturing plan, which centers its cotton business in a few cities—Fall River, Lowell, Lawrence, &c. Some claim that this plan gives better chance to the farming population to sell and get fair prices for their goods. The living, if living it can be called, is very poor. Black bread, potatoes, in summer a few greens, dandelions, &c., gathered in the fields.

In many New England factory tenements you would find a well-arranged, well stocked kitchen, neat, well-furnished bedrooms, a parlor or sitting-room, with a neat carpet, a piano or house organ, a few shelves of books, usually good ones; stuffed chairs, covered with horse-hair; a bed-room for every two members of the family. It is not claimed that this is universally so, but in many factory villages familiar to the writer it is so. Among others, it is so in Lonsdale, Ashton, Berkley, Hope, Saylesville, in Rhode Island—villages that would appear like Baden-Baden compared with factory villages here, where not infrequently, I am informed, a whole family will occupy one room, where a piano or organ, carpets, &c., do not come into the dreams of the toilers, yet they seem a music-gifted people.

Some one has said the greatest torture is the pain of loss. These people suffer no such pain, but if they once worked at the same kind of work in America, they would never endure what they do. Ignorance of the condition of others may be bliss, but one can't believe it.

BADEN'S COTTON SUPPLY.

With a view to obtaining statistics and more immediate information, which I thought might be of value to our cotton-growers, I sent a circular containing, among other questions, one directed to the matter of how and from whom cotton was purchased. To about twenty circulars I received four answers in reply, of which the following are submitted as free translations of three of them:

Letter No. 1.

We beg leave to reply as follows to yours of the 20th of May:

We draw the most of our raw cotton out of Liverpool, Havre, and Bremen.

(1) We use about 7,500 bales per year.

(2) We spin cops from No. 36 to 44s, from which we weave calicoes.

(3) We employ about 1,200 hands, have 64,000 spindles and 540 looms. The daily pay is very different. The hours of labor are twelve hours per day. In order to draw cotton direct out of America a just and honest dealing on the plantations and in packing the raw cotton is necessary.

But above all, the absence of solid, trustworthy, expert export houses in American ports creates a hindrance; then, also, the unmeasurable desire for speculation among handlers of cotton is to be deplored.

Trusting you can make a modest use of this letter, &c., we remain, &c.

Letter No. 2.

ETTLLINGEN, May 14, 1886.

Politely replying to yours of yesterday, we gladly give you the following statistics:

(1) We draw our cotton out of North America.

(2) We use about 3,600 bales, each bale weighing about 4 to 5 centners.

(3) We spin yarns from 8s to 40s; average, 30s.

- (4) We manufacture plain, fancies, and velvets.
- (5) We employ 1,200 persons, male and female.
- (6) There are about 30,000 spindles and 800 looms.
- (7) Eleven hours make a day's work.
- (8) The average pay is from 50 to 75 cents.*

We have the honor to be, &c.

Letter No. 3.

OFFENBURG, June 5, 1886.

We are in receipt of yours of the 20th of May. You will excuse us for not answering before to-day when we assign as a reason our absence for not doing so. We have the honor, in reply to the questions presented in your circular, politely to answer as follows:

- (1) We draw most of our cotton direct from North America.
- (2) The same averages per year 708,000 kilos.
- (3) We make yarns from No. 4 to 52, English.
- (4) Our goods have from 2 to 20 picks.†
- (5) We employ about 500 hands.
- (6) There are about 460 looms and 26,000 spindles.
- (7) The day's work consists of 12 hours, from 6 a. m. till 7 p. m.
- (8) The pay ranges from 20 cents to \$1.40.

J. C. MONAGHAN,
Consul.

UNITED STATES CONSULATE,
Mannheim, June 10, 1886.

INDUSTRIES OF PIRÆUS.

REPORT OF CONSULAR AGENT McDOWALL.

COTTON INDUSTRIES.

There are three mills in which spinning and weaving combined are carried on, but only the commonest of cotton drills, shirtings, and sail cloths are manufactured. These three mills spin, dye, and by steam-power looms weave their cloth. The products of these factories are used in Greece and Macedonia; a small quantity of their goods is also exported to Bulgaria. Greek cotton is generally used in these mills, but occasionally they import from Liverpool, some American cotton for mixing with the Greek, which is of short staple, but exceedingly white in color. Egyptian cotton is also imported for admixture with Greek. The number of spindles in the three mills is 14,000, and of power looms 600. The machinery is all British manufacture. Total number of hands employed in the three mills, 700. Wages of men per calendar month \$10 to \$25, of women \$10 to \$14, and of boys and girls \$3 to \$6; working hours per day, during summer, 13 to 14; during winter, 9 to 10 hours per day. There are five cotton-spinning mills, spinning from No. 4's to No. 20's. The number of spindles in these five mills is 20,000. The yarn they produce is used in the provinces and Macedonia and Crete, being sold to the peasants in bundles, who manufacture it into cloths, stockings, &c. The machinery is all British made. The wages and hours are the same as in the spinning and weaving factories.

* I beg leave to state that I found in this mill, from cellar to garret, in every room, the pay ranging from 20 cents per day to 2 marks, or 50 cents.

† I suppose he means to the second, for I do not see how it can mean either to the centimeter or inch.

The cotton-manufacturing trade here is in a very languishing condition. Three out of the five mills are standing idle, owners having failed. British and German goods can be bought cheaper in the Greek markets than the Greek factories can produce them, although home manufactures are protected by import duties payable on all cotton manufactured goods and yarns. The scarcity of capital and high rates of interest charged for money on loan or discount (8 to 12 per cent.) make it impossible for industries of this class to survive long. Comparatively speaking, also labor is dear, as one woman in an American or English factory can turn out three times the quantity of work a Greek woman will do in a day. The prospects of cotton manufacturers in this country are most hopeless.

STEAM FLOUR MILLING.

There are thirteen steam flour-mills in Piræus. Two of these are on the roller system, but have proved too large and too expensive for their owners, who have failed, and the mills are consequently standing idle.

The other eleven mills have an aggregate of 55 pairs of stones, the largest having 12 pairs, and the smallest 3 pairs.

Consequent upon the number of small steam mills erected in the provinces and islands of late, the large mills in Piræus are suffering from want of trade, and lately four mill owners have failed, their mills being sold to pay mortgages, but no one came forward as buyers, so they remain in the hands of the banks which had advanced the money to build them. These mills are all standing idle.

The machinery in these mills is pretty equally divided between English, French, German, and that made in local workshops. The only American machine used in these mills is the "Eureka" grain-cleaner. These are imported through Liverpool and London, England.

Flour-milling, like most other industries here, has been overdone, so that most of the large and expensively got up mills that have not already failed find it difficult to keep running, there being no sale for their flour.

Stone-dressers' wages run from \$30 to \$50 per month, and ordinary hands about mills get from \$10 to \$15 per month.

IRON AND BRASS FOUNDRIES AND ENGINEERING ESTABLISHMENTS.

There are four foundries for iron and brass and general engineering work in Piræus. Two of these are, for this country, large establishments.

The first of the large foundries, &c., was established by a Greek, Mr. G. Basiliadirs, in 1865—the first establishment of the kind in the country. In it they cast all kinds of iron and brass castings, make and repair engines and boilers, build flour and oil mills and all other kinds of machinery; they also build and engine small steamers and launches.

The second of the large foundries was established in 1874 by a British firm, Messrs. McDowall & Barbour; they carry on the same work as Basiliadirs.

Each of these two establishments employs on an average 70 men (mechanics) and from 50 to 60 youths (apprentices). A British foreman is at the head of each department. The men under them are natives. Good workmen receive from \$1 to \$1.50 per day of ten hours. The apprentices get no pay for the first two years of their apprenticeship; in the third year they receive 10 cents; fourth, 15 cents; fifth, 20 cents; and sixth, 30 cents per day of ten hours.

In the two smaller shops repairs and small castings only are done, and only native workmen employed.

There is no import duty on machinery entering the country; so that this branch of trade is the only one which is not protected, and it is about the only branch which has flourished, and is flourishing, at the present time in the country.

OTHER INDUSTRIES.

There are two wire-nail-cutting factories in Piræus. They bring wire from Belgium drawn and polished ready for cutting. The trade is a small one. All products of these factories are used in the country, none exported. In one of these factories there is also some wood-sawing machinery for sawing deals from Black Sea planks. This factory has also an ice-making machine which they work during the summer months.

There is a small wood-working and steam saw-mill lately started just outside of Piræus for general joiner work, house-carpentering, and furniture-making, employing about 30 hands. The machinery in this establishment is mostly British make.

There is only one oil-extracting and soap-making work near Piræus, but there is another at Eleusis. They extract oil from the olive refuse by a chemical process. The oil thus extracted is used for making the commoner kinds of soap for household purposes. There are several of these factories in the Ionian Islands.

There are two steam factories in Piræus for the manufacture of *halva*; this is a kind of sweetmeat made from sesame seeds boiled and beat up to a pulp with honey or sugar. A large quantity of this is consumed by the Greeks as food during Lent and other religious fasts.

There are six works in which macaroni is manufactured. The power used for driving the machinery is mostly gas motors. All the macaroni made is used in the country; none exported.

There are two pretty large distilleries lately erected on the main road between Piræus and Athens. They make raw grain spirit, which is used in the country for making *raki*. They are also trying to make brandies and rum.

There is only one paper-mill in the country. This was erected some years ago, but on account of bad management and want of money the business has failed, and the mill now stands idle. This is a branch of business which would pay well if properly wrought. Rags can be had cheap, and there is an import duty on all paper imported.

RAILWAYS.

The Athens and Piræus Railway, a line between Athens and Piræus via Phalerum, seven miles long, 4 feet 8½ inches gauge, built by an English company, opened for traffic in 1869, sold to a Greek company in Athens in 1875. The line is built of English material, and stocked with English rolling-stock. The company have their own workshops at Piræus for repairs and for carriage building. Pays a dividend of from 8 to 12 per cent., according to year's workings.

The Pirgo and Catacolo Railway is a line of eleven miles, connecting the towns of Pirgo and Catacolo in the Peloponnesus, meter gauge, built by a Greek company, with German material and stock, and opened for traffic in 1883.

The Pirée-Péloponnèse Railway is now building between Piræus, Athens, Corinth, and Patras, with a branch to Nauplia via Argos.

The line is open for traffic between Piræus, Athens, and Corinth, and intermediate stations, as also the branch to Nauplia. The other part of the line, from Corinth to Patras, is being pushed on vigorously, and is expected to be completed by the end of 1887. The line is meter gauge, built and stocked with German material.

The Attica railways consist of, at present, a line between Athens and Laurium, with a branch to the village of Cephessia; was built by the Laurium Mining Company, and is managed and wrought by same. The line is meter gauge, built and stocked with German material. This line was opened for traffic about a year ago.

A net-work of railways is being laid down in the lately acquired province of Thessaly by a Greek company. The line starts from Volo, on the coast, and runs to Larisa, Carditsa, Farsala, Calambaka, &c., the line being now opened for traffic to the above-named places. The line is on the meter gauge, built of Belgian material, and stocked with Belgium-made stock. When the net-work is completed it is supposed these lines will pay well, as the country is well cultivated through which they pass.

The Greek Government is, I believe, prepared to guarantee a percentage on the outlaid capital for the construction of a line to be built between Piræus, Athens, Thebes, Livadia, &c., to join the Turkish line from Salonica. This would be a pretty large undertaking, and would benefit the country immensely if carried out.

STEAMSHIP COMPANIES IN PIRÆUS AND SYRA.

The Panhellenian Steam Navigation Company has six steamers, with an aggregate tonnage of about 4,500 tons and about 1,000 horse-power. The steamers are fitted up for carrying passengers and cargo, the trade they are employed on being coasting around Greece and the islands, and running as far as Brindisi in Italy.

The D. P. Gonthie Steamship Company owns four small steamers, with a total tonnage of about 1,200 tons and 240 horse-power. They are engaged in the coasting, passenger, and goods trade.

The Syra Steam Navigation Company (headquarters Syra) is the largest steamship company in Greece. They have 13 vessels, with a total tonnage of about 15,000 tons and a total horse-power of 3,000. The company has an arsenal for repairs and slip-dock at Syra. These ships are employed in the coasting trade, but run also to Brindisi, Candia, and Salonica. The company has a subsidy from the Greek Government for carrying the mails, and other public services. The ships in all the above-named companies are, with one exception, British built; one ship was built in France.

A. C. McDOWALL,
Consular Agent.

UNITED STATES CONSULAR AGENCY,
Piræus, June 30, 1886.

MEXICAN LAW CONCERNING FOREIGNERS AND NATURALIZATION.

TRANSMITTED BY MINISTER MORGAN.

DEPARTMENT OF FOREIGN AFFAIRS, CHANCELLOR'S BUREAU,
Mexico, May 24, 1886.

Porfirio Diaz, President of the United Mexican States, to its inhabitants: Be it known that the Congress of the Union has decreed the following:

The Congress of the United Mexican States decrees the following

LAW CONCERNING FOREIGNERS AND NATURALIZATION.

CHAPTER I.—OF MEXICANS AND FOREIGNERS.

ARTICLE 1. Mexicans are:

(1) Those born on national territory, of a father Mexican by birth or by naturalization.

(2) Those born on national territory, of a Mexican mother and a father not recognized as such by the laws of the Republic. Those born of unknown parents or of unknown nationality shall be likewise [so] considered.

(3) Those born outside the Republic, of a Mexican father who has not lost his nationality. If this should have occurred, those children shall be reported as foreigners: having the option, though, of becoming Mexicans within one year from the day they attain twenty-one years, provided, if they live abroad, they make the due declaration before diplomatic or consular agents of the Republic; or, if they reside in national territory, before the department of foreign affairs.

Should the children referred to in the preceding paragraph reside in national territory, and should they, on arriving at maturity, accept any public position, or serve in the army, navy, or the national guard, they shall be considered Mexicans in virtue thereof, without the need of further formalities.

(4) Those born outside the Republic, of a Mexican mother and unknown father, provided the former has not lost her nationality, according to the provisions of this law. If the mother should become naturalized in a foreign country her children shall be foreigners; but they shall have the option of becoming Mexicans under the terms and conditions of the preceding paragraph.

(5) Those Mexicans who having under the provisions of this law lost their national character and who may have recovered it by complying with the due requisites, according to the different cases treated of.

(6) The foreign woman who marries a Mexican, and who, even during her widowhood, retains her Mexican nationality.

(7) Those born outside the Republic, but who, being here in the year 1821, and having taken the oath of independence, have continued to reside in national territory and have not changed their nationality.

(8) Those Mexicans who, established in the territory ceded to the United States by the treaties of February 2, 1846, and of November 30, 1853, complied with the requirements of said treaties to preserve their Mexican nationality. Mexicans who continue to reside in territory belonging to Guatemala are in the same category, also citizens of that Republic remaining in territory belonging to Mexico, as specified by the treaty of September 27, 1882, provided said citizens comply with the stipulations of the fifth article of that treaty.

(9) Foreigners who may become naturalized under the present law.

(10) Foreigners who acquire real estate in the Republic, provided they do not specify their intention of preserving their nationality—as soon as the property is acquired the foreigner shall state to the notary, or the respective receiver, whether or not he desires to obtain Mexican nationality, as granted under paragraph 3 of the thirtieth article of the constitution,* and the decision of the foreigner shall appear in the body of the document.

If he select Mexican nationality, or fail at the time to designate any preference, he may still within a year resort to the department of foreign affairs to comply with the requirements of article 19, and be considered a Mexican.

*“(3) Foreigners who acquire real estate in the Republic or have children born in Mexico, provided they have not declared their intention to preserve their nationality.” [Note by the Department.]

(11) Foreigners with children, born in Mexico, and who do not prefer to retain their character as foreigners. On registering the birth of the child, the father shall indicate his intention in this particular to the judge of the civil register, and the same shall be recorded in the body of the document. If he should select Mexican nationality, or fail to state his intention in that particular, he will still be able to resort to the department of foreign affairs within a year to comply with requirements of the nineteenth article and be considered a Mexican.

(12) Those foreigners who officially serve the Government or accept therefrom titles or public offices, provided that within one year from the date of acceptance of those titles or public offices which should be conferred upon them or from the commencement of their official service to the Mexican Government, they resort to the department of foreign affairs to comply with the requirements of the nineteenth article, and be considered as Mexicans.

ART. 2. Foreigners are:

(1) Those born outside of national territory, subjects of foreign Governments, and who have not become naturalized in Mexico.

(2) The children of a foreign father, or foreign mother and unknown father born on national territory, until they reach the age, when, according to the law on nationality of the father or mother respectively, they cease to be minors. If for one year after they arrive at maturity they do not file with the local authorities of the place of their residence their intention of retaining the nationality of their parents, they shall be considered Mexicans.

(3) Those absent from the Republic without leave or license from the Government, unless on account of studies, or for public interests, or commercial or industrial pursuits, or in the exercise of a profession, who allow ten years to elapse without asking for a prorogation of their term of absence. This prorogation shall not exceed five years on each application, and after the first prorogation is granted, good and sufficient reasons must be given before another can be obtained.

(4) Mexican women who marry foreigners, and who preserve the character of foreigners even during their widowhood, the marriage being dissolved, the native woman can recover her nationality, provided that, in addition to residing in this Republic, she make due declaration before the civil judge nearest her residence of her intention to recover that nationality.

The Mexican woman who, under the laws of her husband's country, does not assume his nationality by her marriage shall retain her own.

The change of the husband's nationality after marriage implies a similar change in that of the wife and the minor children subject to the father's authority, provided they live in the country of naturalization of the husband or father, respectively, with the sole exception stated in the preceding clause of this paragraph.

(5) Mexicans naturalized in other countries.

(6) Those who, without leave of Congress, officially serve foreign governments in any political, administrative, judicial, military, or diplomatic capacity.

(7) Those who, without previous leave of the Federal Congress, accept foreign decorations, titles, or offices, save in the case of literary, scientific, or humanitarian titles, all of which they are free to accept.

ART. 3. In order to determine the place of birth in the above cases, it is hereby declared that national vessels, without any distinction, are part of the national territory, and that those born on board of them are considered as being born within the Republic.

ART. 4. In virtue of the right of extraterritoriality enjoyed by diplomatic agents, the children of ministers and employés of the legations of the Republic will never be regarded as being born outside the Republic.

ART. 5. The nationality of legally responsible persons or beings is regulated by the law which authorizes the same. In consequence, all those so constituted, according to the laws of the Republic, shall be Mexicans, if, in addition, they make it their legal residence.

Legally responsible foreigners enjoy in Mexico the rights guaranteed by the laws of their country in so far as these do not conflict with the laws of the nation.

CHAPTER II.—OF EXPATRIATION.

ART. 6. The Mexican Republic recognizes the right of expatriation as being natural and inherent in every man, and necessary to the enjoyment of individual liberty. In consequence, while it allows its inhabitants to exercise this right, so they can leave its territory and settle in a foreign land, it also protects the right of foreigners of all nationalities who seek to settle within its jurisdiction. The Republic, therefore, receives subjects or citizens of other states, and naturalizes them under the provisions of this law.

ART. 7. Expatriation and consequent naturalization obtained in a foreign land do not exempt the criminal from extradition, trial, or punishment to which he may be subject under the provisions of treaties, international law, and the law of the land.

ART. 8. Citizens naturalized in Mexico, even if abroad, have a right to equal protection on the part of the Government of the Republic with native-born Mexicans in their persons or their property. This does not, in case they return to their native land, exempt them from responsibilities incurred before their naturalization, under the laws of that land.

ART. 9. The Mexican Government shall, through the channel of international law, protect Mexican citizens when abroad. The President, as he may deem necessary, shall make use of these means, provided they do not constitute acts of hostility. But if diplomatic intervention be not sufficient, and such measures prove futile, or if the offenses against the Mexican nation be serious enough to demand severer measures, the President shall notify Congress thereof, and furnish the respective documents for constitutional effect.

ART. 10. The naturalization of a foreigner becomes nullified by his residence in his own country for two years, unless he be absent on an official commission for the Mexican Government, or with the permission of the same.

CHAPTER III.—OF NATURALIZATION.

ART. 11. Foreigners who comply with the requisites of this law may be naturalized in the Republic.

ART. 12. At least six months before applying for naturalization papers the applicant should state, in writing, before the municipal council of his place of residence, his intention of becoming a Mexican citizen and of resigning his foreign nationality. The municipal authorities shall give him a certified copy of his application and preserve the original in their archives.

ART. 13. When the said six months shall have passed, and the foreigner has resided two years in the Republic, he may apply to the Federal Government for his certificate of naturalization. To obtain it he should first present himself to the district judge in whose jurisdiction he resides, and furnish proof of the following:

(1) That according to the law of his land, he enjoys all civil rights, being of age.
(2) That he has resided in the Republic at least two years, and has observed good conduct.

(3) That, for his living, he has some business, industry, profession, or revenue.

ART. 14. The applicant shall add to the petition presented to the district judge a copy of the certificate issued by the municipal authorities, as specified in article 12. He shall also make an express renouncement of all submission, obedience, or fidelity to foreign Governments, and especially to that of which he had been a subject, disclaiming also all protection outside of the laws and authority of Mexico, and all rights which, by treaties or by international law, are guaranteed to foreigners.

ART. 15. The district judge, prior to the ratification made by the applicant, in the presence of the district attorney, shall take the deposition of witnesses on the points referred to by article 13, and, if he deem it necessary, shall obtain the report which the municipal council should furnish, as promised in article 12.

The judge shall also admit any other proofs presented by the interested party touching the points indicated in article 13, and shall consult the judgment of the district attorney.

ART. 16. In case the decision of the judge be favorable to the applicant, he shall transmit the legal documents, in original, to the department of foreign affairs, applying for the certificate of naturalization, provided there be no legal motive to impede the same. Through the said judge the interested party shall transmit a petition to that department asking for the certificate of naturalization, ratify his renouncement of the rights of a foreigner, and protest adherence, obedience, and submission to the laws and authorities of the Republic.

ART. 17. Foreigners serving in the national merchant marine may become naturalized, one year of service on board sufficing instead of two years, as otherwise required under article 13. The district judge of any of the ports touched by the ship is amply authorized to negotiate this matter, and, likewise, any of the municipal authorities of those ports may receive the petitions treated in article 12.

ART. 18. Foreigners naturalized under this law are not included in the provisions of articles 12, 13, 14, 15, and 16, neither are they who have the option of Mexican nationality. In consequence, children of a Mexican father or mother, who has lost his or her citizenship, and to whom the third and fourth paragraphs of article 1 refer: the foreigner who marries a Mexican, referred to in paragraph 6 of the same article; the children of a foreign mother and unknown father, born on national territory, as specified in paragraph 2 of article 2; and a Mexican, widow of a foreigner, as treated in paragraph 4 of the same article, shall all be considered as legally naturalized by

solely complying with the requisites in such cases and without the necessity of other formalities.

ART. 19. Foreigners who find themselves within the scope of paragraphs 10, 11, and 12 of article 1 may apply to the department of foreign affairs for their certificate of naturalization within the term specified therein. Their petition should be accompanied by a document accrediting them, as the case may be, with the acquisition of real estate, or that they had children born in Mexico, or had accepted some public position. They will also present the renouncement and protest required under articles 14 and 16 for ordinary naturalization.

ART. 20. Absence in a foreign land by permission of the Government does not conflict with the residence clause in article 13, provided it does not exceed six months during any period of two years.

ART. 21. Certificates of naturalization shall not be extended to subjects or citizens of any nation with which the Republic may be engaged in war.

ART. 22. Neither shall certificates be given to those who are judicially repudiated, and, in other countries, declared to be pirates, slave dealers, incendiaries, counterfeiters of coin, or forgers of bank bills or other paper passing current as money, nor assassins, kidnappers, or thieves. By common right, naturalization papers fraudulently obtained by a foreigner in violation of the law are null and void.

ART. 23. The certificates of naturalization shall be issued gratuitously, nor may any fee for costs, registry, seal, or other expense be collected thereon.

ART. 24. The act of naturalization being a very personal matter, the petitioner may only be represented by a proxy who has special and sufficient powers for the act, and who holds the renouncement and protest made in person by the interested party himself, according to articles 14 and 16. But in no case may the powers of the proxy substitute the actual residence of the foreigner in the Republic.

ART. 25. The character of citizen or of foreigner is not transferable to a third party. Therefore, for obvious reasons, neither can the citizen enjoy the rights of a foreigner, nor the latter the prerogatives of the former.

ART. 26. The change of nationality does not produce retroactive effects. The acquisition and rehabilitation of the rights of a Mexican only take effect on the day following that on which all the conditions and settled formalities of this law have been complied with to obtain naturalization.

ART. 27. Colonists who come to this country under contract with the Government, and whose expenses for traveling and installation are paid by the same, shall be considered Mexicans. In their enrollment contract shall be specified their intention to renounce their former nationality and adopt the Mexican, and on settling in the colony they shall file with the competent authorities the renouncement and protest, as required under articles 13 and 16. The authorities shall send the same to the department of foreign affairs, which in turn shall issue the certificate of naturalization in favor of the interested party.

ART. 28. Colonists who come here on their own account, or for private companies or organizations not subventioned by the Government, and also immigrants of all classes, may become naturalized in each case under this law. Colonists established up to the present are subject also to the law in this particular in every respect that does not conflict with the rights acquired through their contracts.

ART. 29. The naturalized foreigner shall become a citizen of the Republic as soon as he complies with the conditions required by article 34 of the constitution, being clothed with all the rights and obligations as a Mexican citizen; but he shall not be qualified to discharge those trusts or employments which, in conformity with the laws, require the nationality by birth, unless he had been born in national territory, and that said nationality had been effected by paragraph II of article 2.

CHAPTER IV.—OF THE RIGHTS AND OBLIGATIONS OF FOREIGNERS.

ART. 30. Foreigners in the Republic share the civil rights pertaining to Mexicans, and the guarantees offered in section 1, title 1, of the constitution, with the sole exception of the faculty held by the Government for the expulsion of pernicious foreigners.

ART. 31. In the acquirement of waste and Government lands, of real estate, and of ships, foreigners are not obliged to reside in the republic, but are subject to the restrictions imposed by the laws now in force, with the understanding that all leases of real estate made to a foreigner shall be considered as sales if the term of the contract exceed ten years.

ART. 32. The federal law alone can modify the civil rights of foreigners by the principle of international reciprocity, so that, therefore, foreigners may be subject in this Republic to the same legal disqualifications which the laws of their country impose on Mexicans there resident. Consequently the provisions of the civil code and of district procedure possess, in this respect, a federal character, and are obligatory throughout the Union.

ART. 33. Foreigners, without forfeiting their own nationality, may make their homes in the Republic for all legal effects. The acquirement, change, or relinquishment of their residences are subject to the laws of Mexico.

ART 34. In case of the suspension of individual guarantees, in the terms prescribed by the 29th article of the constitution, foreigners and Mexicans are alike subject to the law decreasing the suspension, save in the case of treaty stipulations.

ART. 35. Foreigners are obliged to contribute towards public expenses in the manner prescribed by the laws, and are also required to respect and obey the institutions, laws, and authorities of the country, subjecting themselves to the decisions and sentences of the courts and without appeal to other recourses than are granted to Mexicans by the laws. They can appeal to the via diplomatica only in case of the denial of justice or of voluntary delay in its administration, after having exhausted, without effect, the common legal recourses, and that as determined by international law.

ART. 36. Foreigners do not enjoy the political rights of Mexican citizens. They, therefore, cannot vote, nor be voted for in any popular elections, nor be named for any position or commission in a State career. Nor can they join the army, navy, or national guards, nor become associated with, or engaged in, the political questions of the country; nor exercise the right of petition in these matters. This is understood not to conflict with the provisions of article 1, paragraph XII and of article 19 of this law.

ART. 37. Foreigners are exempt from military service. Foreign residents, though, are obliged to serve as police in the event of preserving property and of maintaining order in the place in which they live.

ART. 38. Foreigners participating in the civil dissensions of the country may be expelled from its territory as pernicious foreigners, being subject to the laws of the Republic for any crimes they may commit against it, and without the privilege of having their rights and obligations regulated by international law or by treaties in case of a state of war.

ART. 39. The laws establishing the matriculation of foreigners are repealed. The department of foreign affairs alone can issue certificates of determined nationality to foreigners soliciting the same. These certificates constitute a legal presumption of foreign citizenship, but proofs to the contrary are not barred. The definite proof of determined nationality is presented before the competent courts and by the means established by laws or treaties.

ART. 40. This law does not concede to foreigners any rights denied them by international law, by treaties, or by the laws in force in the republic.

CHAPTER V.—TRANSITORY MEASURES.

ARTICLE 1. Foreigners who have acquired real estate, or have had children in Mexico, or have held some public position, and who are embraced in the provisions of paragraphs X, XI, and XII of article 1 of this law, are obliged to manifest, within six months after its publication, provided they have not previously done so, to the political authorities of their place of residence, whether they desire to obtain Mexican nationality or to retain that of foreigners. In the first event, they should immediately apply for the certificate of naturalization, according to the form prescribed in article 19 of this law. If they fail to manifest, as indicated, they shall be considered Mexicans, save in cases where official declaration has been made on that point.

ART. 2. Colonists resident in the country, to whom the last part of article 28 of this law refers, shall manifest, in the manner specified in the preceding article, the nationality they wish to retain, and also apply for their certificate of naturalization under the provisions of that article, if the nationality they desire be Mexican.

ART. 3. The Executive, in issuing the necessary regulations for the execution of this law, shall see that requisite measures are taken, so that the local authorities may as far as they are concerned, give it due fulfillment.

JAPANESE BEAN CURD.

REPORT OF MINISTER HUBBARD.

I transmit herewith a translation of an article on the manufacture of tōfu, or Japanese bean curd, published by the Educational Museum of Tokio. The use of this bean (the *Soja hispida* or *Glicine hispida*) in the manufacture of so nutritious an article of diet, the nearest approach, as it is stated, in its chemical constituents to animal food among known vegetable foods, seems to me one to which attention should be called, with a view to introduce it upon our tables.

RICHARD B. HUBBARD,

UNITED STATES LEGATION,

Tokio, June 24, 1886.

Minister.

[Inclosure No. 1 with Mr. Hubbard's No. 182.]

THE MANUFACTURE OF TÔFU, 'OR JAPANESE BEAN CURD.*

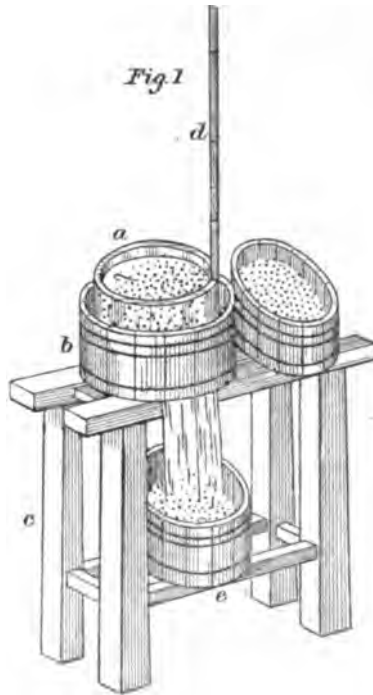
EARLY HISTORY.

Tôfu or bean curd was first used in China, according to the statements of Chinese authorities, in the reign of Wai-rau-wo of the Hau dynasty (B. C. 206 to A. D. 25).

In Japan the record of its use only dates back to the third decade of the fourteenth century, mention being made of it in the works called *Tei-kin-wo-rai* and *Isei-tei-kui-wo-rai*, edited by Kitabatake Geni, and previous to which time we do not find any reference whatever to tôfu or the bean from which it is made, the *Soja hispida*.

METHOD OF PREPARATION.

The yellowish-white beans are soaked in water for twenty-four hours, or a night and a day, when they are poured into a stone mill (Fig. 1) and ground. As the quality of the product of manufacture is largely dependent upon the purity of the water used, it is necessary that the purest water obtainable should be employed. The beans, having first been pounded, are mixed with an equal quantity of water in the oblong tub, Fig. 1 (a), and gradually poured into the orifice in the upper stone of the mill with a



copper dipper. This mill resting within a bottomless tub (b) some eight or ten inches in height, upon the narrow wooden stand, is rotated by means of the bamboo rod or handle (d), which has one end inserted into a socket in the upper millstone. The thin pulp of ground beans and water as it flows from between the stones of the mill is directed into a tub beneath (e), and kept from running along the horizontal bars of the table by the perpendicular sides of the bottomless tub which surrounds the mill.

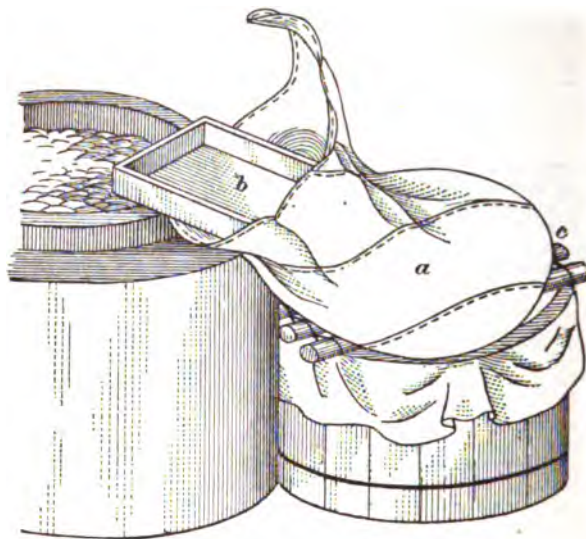
The pulp which is collected in the under tub (e) is put into an iron pot and heated over a wood fire until it begins to boil, which stage is indicated by the appearance of bubbles or foam upon the surface.

One or two gills of cold water are then poured around the edge of the pot inside, and as soon as the foam has subsided the pot is covered and a second boiling takes place; cold water is then again poured in and the contents allowed to stand. In

*The translation was made by Dr. W. N. Whitney, interpreter of the legation.

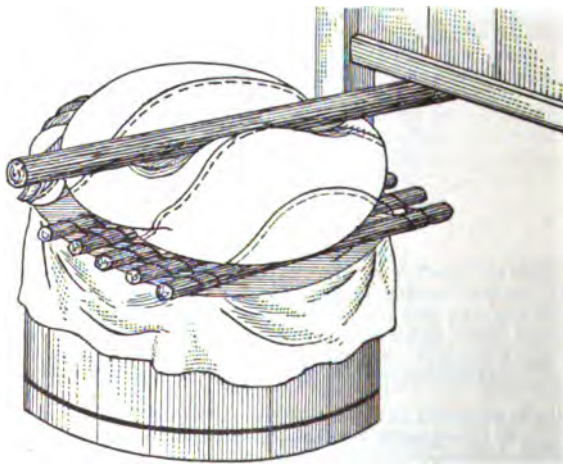
stirring and mixing the pulp in the pot, a kind of wisp, made of split bamboo and coated with thickened oil dregs, is employed. The pulp is then dipped out of the pot

Fig. 2.



with a ladle of bamboo, into a grass-cloth bag (Fig. 2, *a*), to prevent it running over the sides of which, a kind of flat wooden trough (*b*) is used. Several dipperfuls of water are then poured into the bag, the mouth of which is tied up and the whole laid upon a mat of sticks (*c*), and over a linen cloth stretched over the top of a shallow tube, as shown in Fig. 02. Pressure is then brought to bear upon the bag by means of the round wooden stick used as a simple lever, as shown in Fig. 3. The liquor

Fig. 3.

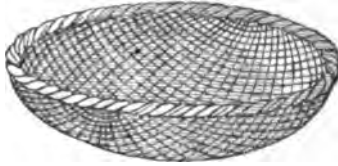


which oozes out, filters through the cloth laid over the top of the shallow tube, into the vessel beneath. Should the quantity of pulp ground up be large, several bags will

be necessary, or one bag may be refilled several times. The contents of the tube, being the liquor expressed from the grass-cloth bag containing pulp, is then stirred up with about a gill of brine* poured in with a little bamboo ladle, and the cloth cover replaced. The cloth is again removed after the lapse of a few minutes allowed for the brine to thoroughly mix, and two gills more of brine are poured in, and, a few minutes later, still another portion of two or three gills, a little at a time.

Whenever coagulation takes place in the filtered liquor in the tube, a shallow bamboo basket (Fig. 4), containing a stone to keep it down, is twice let down into the

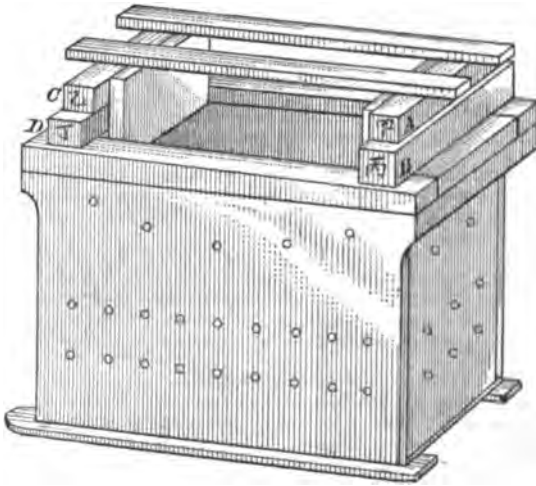
Fig. 4.



liquor, and the water which runs into the basket is removed. When coagulation is complete, the bamboo basket is inverted and the tub tilted to one side, to allow the water to drain off through the meshes of the basket.

The next step is to transfer the coagulum from the tub to the rectangular-formed box (Fig. 5), which is accomplished in the following manner: A wooden frame, which

Fig. 5.



just covers the edges of the forming-box, is placed in position upon the open top of this box, which, it should be stated, is 1.8' long, 0.62' wide, and 1' deep inside, and a large cross-shaped piece of linen having four flaps is let down into the box through the orifice of the frame, so as to allow the four flaps to hang over the sides of the frame and box. The coagulated substance is ladled into the box until it is full even with the top of the frame; a mat made of split pieces of wood, bound together with a string, and which just fits the orifice of the frame and box, is placed upon the coagulum within them, and a wooden cover is placed then upon the whole. The cover consists of one flat piece of wood fitting the frame and provided with two flat pieces of wood upon the narrow sides crosswise, and upon them two narrow strips of wood running longitudinally with the cover itself and across the flat pieces, bearing upon them a heavy stone. There are also four short pieces of wood (marked A B and C D in the plate), which, placed across the ends of the forming-box, hold the

*The brine used is obtained by deliquescence, and precipitates the vegetable caseine or legumen contained in the liquor expressed from the pulp.—Tr.

longitudinal bars of the cover as they come down under the weight of the stone upon them, the water thus expressed flowing through the lining cloth and out of the perforations in the sides and bottom of the forming-box. The relations of the cross-pieces and the longitudinal bars with each other are such that the pressure of the stone upon the cover is relieved by the side blocks A B and C D whenever the level of the tōfu in the forming-box sinks to that of the top of the box. The box with its contents are then placed in a large trough of cold water. After standing a little while to allow the tōfu to cool, the box, having been inverted, is removed, leaving the coagulum behind. After taking off the cloth filter, the tōfu, which has assumed by this time the consistency of a cooked omelet, is cut up with a broad-bladed brass knife into quite thick slabs of about 4 by 6 by $1\frac{1}{4}$ inches in size. The quantity of water and brine used in the preparation of tōfu should be in the proportion of 15 sho (1 sho = 109.72 cubic inches = about 1 quart, 1 pint, and $\frac{1}{4}$ gill, imperial measure) of water, and $\frac{1}{4}$ sho of brine to 4.5 sho of the bean.

Preparing tōfu for the table.

Tōfu may be prepared in many ways for the table, such as by frying or toasting, or making into soup. It may also be scrambled or made into croquettes. When fried, toasted, or scrambled, it has very much the taste of sweet-bread, and when saturated with Japanese soy is not unlike that dish in appearance and consistency. When used in soup it is cut up in little squares. There are several books in Japanese treating of this subject, such as the "Tōfu-zoku hyaku-chin," or the "Hundred curiosities in Tōfu."

USES OF TŌFU.

Tōfu, and the residue in its manufacture, are used for various other purposes, such as in the imitation of tsuyu-shu, a kind of vermillion. For this purpose tōfu from which the water has been expressed is mixed with a kind of red lacquer, with a spatula, and thoroughly kneaded. This resulting paste is laid upon the articles to be manufactured, and after drying it may be carved or engraved upon.

The warm water in which the beans are first boiled is used to extract grease from clothing, and to cleanse the mats used upon the floors of Japanese houses, and also for washing the ceilings, for which purposes it has no equal. The pulp remaining in the grass-cloth after the vegetable caseine has been expressed, is used by the Japanese women as a substitute for soap in washing the hair. It is also used when mixed with finely-chopped straw as a food for horses and cattle, and sometimes as manure.

THE SOY BEAN.

The following description of the chemical constituents of the soy bean and tōfu made from it are taken from Professor Kiuch's article upon the Agricultural Chemistry of Japan, Asiatic Society Transactions, Vol. VIII, page 398, and will help to render the foregoing translation more useful:

"The soy bean is sometimes called Japan pea, *Glycine hispida* (Moench), and also known as *Soja hispida*. There are many varieties, of different color and size, &c., but, as far as is known, they differ but little in composition. They are known collectively as *daidzu* or *omame*; a common white round variety is known as *miso-mame* and *shiro-mame*; other names of varieties are *awo-mame*, *kuro-mame*, *ki-mame*, *ichiya-mame*, *kurakaki-mame*, and *korinza*.

"This bean approaches more nearly in its chemical composition to animal food than any other vegetable known. It contains about one-fifth of its weight of fat and nearly two-fifths of nitrogenous matter. It is exclusively cultivated in the north of China and also grows in the Himalayas. In China it is compressed for the sake of its oil, and the residual cake is used for food and also extensively as a manure. In Japan it is used in the preparation of *shoyu* and *miso* (sauces) and *tōfu*, and also of *yuba*, and in these various forms enters to a considerable extent into the food of the nation, to which it is a most valuable contribution, supplying as it does the alimentary principles, albuminoids and fats, in which the staple food, rice, is deficient. It also contains a much larger percentage of the necessary mineral matters than does rice. Of late years this bean has been grown experimentally in different parts of Germany with success. The haulm and leaves furnish a valuable fodder, and a variety is cultivated for that purpose and known as *kari-mame*.

"The composition of the whole variety known as *miso-mame* was found to be—

Water	11.32
Ash	3.86
Fat	20.69
Albuminoids	37.75
Fiber	2.00
Starch, &c	24.06
	99.90

"The composition of Indian, Chinese, and German specimens has been found to differ but little from the above; in them the fat varied from 15.8 to 21 per cent., and the albuminoids from 30.6 to 39 per cent.

"The composition of tōfu made from these beans has been found from examination to be as follows:

Water	89.29
Ash	.48
Fat	3.32
Nitrogenous matter	4.87
Soluble carbo-hydrates	2.04
	100.00

"There is a kind of tōfu called *kōri-dō-fu* prepared from ordinary tōfu by freezing it and afterwards exposing to the sun, when, in the process of thawing, the greater quantity of the water is removed, leaving a horny, spongy residue.

"This tōfu contains, according to Professor Kinch—

Water	18.75
Ash	1.60
Fat	28.80
Nitrogenous matter	48.80
Soluble carbo-hydrates	2.05
	100.00

FINANCES AND TRADE OF JAPAN.

REPORT OF CONSUL JERNIGAN, OF OSAKA.

The Japanese minister of finance, Matsukata Masayoshi, under the sanction of the Emperor, has just published the budget for the fiscal year beginning on the 1st of April, 1886, and ending the 31st of March, 1887. Heretofore these budgets have not been so clear and explicit, but the present one is far in advance of all others, and presents the finances of Japan in an exceedingly intelligent light. It has been a complaint that the great masses of the people have been kept in ignorance as to the expenditures of the Empire, but there no longer exist grounds for such a complaint, for Minister Masayoshi has laid before all a thorough and unreserved account of the public receipts and disbursements of the revenues of Japan. The present fiscal year, being the nineteenth in the Japanese calendar, is compared with their seventeenth calendar year, these two years being selected because each contains twelve months, while the others, owing to changes in the laws or administration, are not uniform in their length. A comparison of the total amounts of revenue and expenditure for these two years shows a decrease of 1,287,554 yen in revenue, and a decrease of 1,293,548 yen in expenditure.

REVENUE.

In examining the items in which the most marked decrease of revenue appears, it is found that the tax on *saké* (the national drink) is very much smaller, owing to the great decrease in the quantity brewed during recent years. Another item is the decrease for the scales, stamps, and ruled paper in judicial proceedings. A third, in the decrease from the tax on stock exchanges, due to the effect of notification No. 39, November, 1885, by which money exchanges were prohibited. A fourth, in the decrease of revenue from tax on tobacco and druggists, due to the decrease in the estimate thereof, which has been founded on the actual experience of the last two years. A fifth, in the decrease in the

receipts from Government works, due to the large decrease in the revenue from railroads. There are other items, but the above are the more prominent, the total decrease being 5,338,036 yen.

Against this large decrease of revenue there are several items of increase, the chief of which are—

(1) The revenue from telegraphs, due to the fact that formerly the net profit was placed to the revenue account, but now the revenue and expenses of telegraphic works have been placed under the direct charge of the national treasury.

(2) The revenue from forests, due to reforms in the administration of the forests.

(3) The revenue from land, tax due to reforms in the classification of lands.

(4) The revenue from the tax on rice exchanges, due to the effect of two notifications, Nos. 36 and 38, of November, 1885, the former amending the regulations for rice exchanges in respect to the articles about commissions, and the latter abolishing the tax on brokers in the rice exchanges, so that it is anticipated that rice operations will be a thriving business, and the revenue of the Government therefrom will probably increase.

(7) The revenue from the tax on ships, due to the increase of steam vessels and small crafts.

(8) The revenue from customs dues, in anticipation of the probable increase of exports and imports; and another large item of increase is due to the fact that loans repaid are now placed to the credit of the ordinary revenue, while formerly they were credited to the revenue fund.

The total amount of increase is 4,100,482 yen. Subtracting the amount of increase from the amount of decrease, there is 1,237,554 yen on the side of the latter.

EXPENDITURES.

The above table would be imperfect without another table showing the causes of the decrease and increase of the expenditures. The following table will show this.

One of the chief causes of the decrease is due to the fact that the cost of building men-of-war is under special appropriation.

A second is in the subsidies to navigation.

A third is in the subvention to the Nippon Railway Company.

A fourth is in the expenditure of the cabinet, owing to reforms in the administrative system.

A fifth is in the expenditure of the foreign department, owing to reforms therein.

A sixth is in the expenditure of the home department, owing to reforms therein; and a marked decrease also appears in the expenditures for the departments of finance, education, agriculture, and commerce, due to reforms in these departments.

It appears that in every department of the Government the most thorough reforms are going on and every unnecessary expense curtailed. The total sum saved by this system of economy is 8,415,917 yen.

Against the table of decrease in expenditures is the following, showing the causes of the increase in expenditures:

One of the chief causes is the expenditures for telegraphs, formerly paid according to the regulation of expenses for work, but now placed under the ordinary expenditure.

Another cause is increased expenditures for military affairs, affairs relating to the navy, and for collecting the revenues, and to prevent evasion of the same.

Another cause is the increase of judicial service under the judicial department; to the increase of the number of senators, and the salary of temporarily unemployed officers.

The total increase of expenditures amounts to 7,122,369 yen, which, deducted from the amount of decrease expenditures, shows a balance in favor of the latter of 1,293,548 yen.

PUBLIC DEBT MANAGEMENT.

In regard to the liquidation of the national debt, it was originally determined that from 1878 the sum of 20,000,000 yen yearly should be applied to that item out of the revenue of every fiscal year, and that when that sum proved insufficient in amount the deficiency should be supplied out of the reserve fund. The sum in question was to be applied to the payment of the principal and interest of the national debt and to the redemption of the paper currency; but for a long time the value of the paper currency declined daily and the national economy fell into a great state of confusion. However, most of the difficulties have been overcome, and, according to the calculation of the estimates for several years to come, the minister of finance expresses confidence in the ability of the Government not only to repay all outstanding foreign and internal loans within the periods already fixed, but before the expiration of those periods.

I have thought that it might be desirable to point out, with some particularity, the special departments of the Japanese Government, in which expenses have been increased and decreased, for a mere statement that expenses had been curtailed would not be as satisfactory as if followed by another showing where the hand of economy had been at work.

Closely connected with the subject of the national budget is another of no less importance.

PAPER MONEY INFLATION IN JAPAN.

Soon after the restoration of the Mikado to actual power, in 1868, paper money had become almost the only money in Japan, and issues and the value of it were so well controlled that there was scarcely any depreciation; but when the Satsuma rebellion took place, in 1877, public necessity enforced large issues of this money and its value rapidly depreciated. About that time control of it was relaxed, and in 1881 182 yen in paper would only command 100 yen in silver. As this decline proceeded, the prices of all commodities rose, and in many instances proportionately much more than money had fallen. The ordinary effects of disturbance in the value of money had in fact occurred in Japan, as they had often previously occurred in other countries. In the year 1881, therefore, nearly everything in Japan had greatly risen in price, and as the great majority of the people considered only price and not value, and ignored the wholly factitious nature of the advance, it is not surprising that they imagined it both solid and likely to endure, and thought themselves very prosperous and quite justified in launching into much extravagant expenditure. Accordingly new farm-houses sprang up in every province; new clothes and ornaments were freely purchased; landed property became in great demand, and capital was

inconsiderately borrowed at high rates of interest (and as inconsiderately lent by the national banks), and in general everybody rejoiced in hope and a sense of prosperity.

There is no doubt that the country progressed rapidly under this favorable monetary tide, and, in the absence of any great body of debts, and of any general system of credit, the number of those who suffered by the rise of prices was comparatively small—they being mostly bankers or feudal lords whose coffers were supposed to be well filled, and who made little complaint of their own hardship, though many of them were soon ruined. The people in general took their apparent good fortune merrily, and for a year or two trade was everywhere lively, while foreign goods, which were then more or less regarded as luxuries, were in especially active demand.

CONTRACTION.

Before long, however, the Government awoke to the dangers of the fever it had excited among its subjects, and resolved to contract the currency which it, and the national banks it had created, had so freely issued. By 1882 it had entered upon this contraction, and it firmly persisted in it till at the end of 1884 it had so reduced the volume of the currency that paper and silver were nearly at par, and it has finally succeeded in this present year in making both currencies actually equal and interconvertible. But this wholesome end was not and could not be thus rapidly attained without great disturbance of and confusion in all other business. Prices of course fell as precipitately as they had risen, and, as usual, their fall was often greater in proportion than the rise in the value of money. With this fall in prices distress and desolation extended over the land, and millions of people who had supposed themselves on the high road to wealth, suddenly found poverty staring them in the face, while exacting creditors on all sides demanded liquidation of debts. Depression and a sense of adversity naturally followed; bankruptcies became common, and misery was everywhere present among this light-hearted and kindly people. It is now hoped that the lowest depths have been reached. Forced liquidations have probably passed their maximum (though land is still very cheap) and prices have latterly shown more steadiness. Fortunately for the nation, its burden of debt, even now, is comparatively small, and creditors in Japan are well accustomed to accommodate their demands to the resources of their debtors. The crisis is probably nearly over, and it can hardly be long before people will return to their industries with usual vigor, and will find themselves on a much firmer foundation for business than that upon which they so gaily drifted along a few years ago. For the present, however, they appear stranded upon a hard and dismal shore, and have not yet recovered their usual courage and energy. But necessity is pressing many to exertion, and with an enforced return to frugality and diligence, production and trade will doubtless gradually revive and prosperity finally return.

FOREIGN COMMERCE.

The depressed condition of business has, of course, had its effect upon foreign trade, which has steadily declined in value for several years past, and is now in a very low condition, as far as prices are concerned. In actual value imports have not seriously diminished—many foreign goods having now become articles of necessity among this people. In

some, as in kerosene oil, for example, consumption has even considerably increased, so that in the past year the sales of that article have reached nearly 2,000,000 cases. But for most of the commodities which foreign countries send to Japan, merchants have had to accept low prices.

Importers have had some benefit from the greatly reduced cost of most goods in the countries of production, and of unusually low rates of freight, and if these advantages had not been largely neutralized by the rates of exchange, the low prices in Japan might have been met with more equanimity. The continuous fall in exchange has apparently deranged every calculation. Week by week the gold price of silver in London is reported lower, with a consequent fall of exchange in the East. This steadily adverse tide strikes every homeward remittance for goods sold here, and seems to defy all foresight and all reckoning. In addition to this element of loss, importers find that nearly every article they bring here from abroad is continually declining in its price at the places of shipment, so that goods arriving here can almost always be undersold by goods on the way, advices of which come quickly by telegraph, while the goods themselves follow almost immediately by steamer and at lower and lower freights.

Thus the improved appliances of modern civilization, which ought naturally to stimulate and subserve trade, now serve but to unsettle and discourage it, and business in imported goods in all the Eastern countries is rendered dangerous and incalculable by an adverse force which is quite beyond the traders' control. It might be expected that the current which operated against import trade would favor export trade, and so it does to some extent.

The low rates of exchange on Europe and America have stimulated shipments of the produce of all Oriental countries, and of Japan among the rest. This increase of export trade, in conjunction with the reduced value of imports, has also greatly assisted the Government and people of Japan in their efforts to create that excess of exported over imported commodities which was essential to their re-establishing the required flow of silver hither. But unfortunately for the merchants engaged in this export business, prices in all the communing countries have not only been lowered by the increased supply of Eastern goods, but by another and more subtle factor which few of them have known how to reckon with, namely, the continual appreciation of gold in all the Western countries, which movement appears to produce there just such effects as the contraction of the currency lately produced here, so that prices of commodities fall relatively more than the monetary charges in themselves seem to justify. In consequence of this state of things the export trade of Japan during the past year has been almost as uncertain in its condition and as unsatisfactory in its results as the trade in imports; and in neither have merchants made gains at all adequate to the energy and enterprise with which they appear to conduct their business. The remedy for such an unstable foundation of trade is such monetary regulations in the Western countries as will insure steadiness of prices under ordinary mercantile condition, and when this is attained commerce with the East will be more inviting.

T. R. JERNIGAN,
Consul.

UNITED STATES CONS. LATE,
Osaka and Hiogo, June 8, 1886.

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KEROSENE OIL TRADE AT OSAKA AND HIOGO.*REPORT OF CONSUL JERNIGAN.*

I submit herewith a tabulated statement in reference to the importation of kerosene oil at this port from the United States. As kerosene oil is the principal article of import, I have been careful to select the statistics, showing the extent of the trade in the same from the most reliable sources. As will be seen from the table, it covers the trade in this article from 1882 to 1885, and shows the quantity imported and delivered during each month of the above years, as well as the stock on hand for the same periods. It may safely be taken for granted, from the present outlook, that the trade in kerosene oil will show an increase for the present fiscal year over that of any preceding year.

TEA.

The trade in tea has opened unusually brisk, and the crop promises to be large. The growing importance of this port for the export of tea, one of the chief products of Japan, is evidenced by the fact that up to May, 1885, there were 2,339,995 pounds exported, and to May, 1886, 3,871,145 pounds, showing a balance in favor of the latter of 1,531,150 pounds. Such an increase is not likely to be diminished in the future, for this port is the outlet for the great tea districts contiguous to it, and being considered the healthiest in Japan, as it certainly has the finest climate, it must constantly increase in population and trade and become the center of the wealth and refinement of the Empire.

DISCHARGING CARGOES.

The facilities for unloading ships arriving in this port with foreign cargoes are not satisfactory. Too much time is consumed. The cargoes have to be first put into small boats and then brought ashore, requiring double the labor and expense that would be required if the Japanese Government or private enterprise would construct suitable wharves for such purposes. The delay now experienced in discharging cargoes is very trying to the patience, a great drain on the purse, and an evil that should at once be removed. The same unnecessary waste of money and time is consumed in loading ships. The interest of commerce demands more attention for this subject than has been given to it.

T. B. JERNIGAN,
Consul.

UNITED STATES CONSULATE,
Hiogo, Japan, June 18, 1886.

Kerosene oil statistics of Osaka and Hiogo, 1882-1885.

Months.	Imports.				Deliveries.			
	1882.	1883.	1884.	1885.	1882.	1883.	1884.	1885.
	<i>Cases.</i>	<i>Cases.</i>	<i>Cases.</i>	<i>Cases.</i>	<i>Cases.</i>	<i>Cases.</i>	<i>Cases.</i>	<i>Cases.</i>
January	91, 600	95, 626	52, 500	62, 039	80, 946	89, 306	64, 168	
February	39, 500	140, 025	100, 000	41, 839	35, 210	73, 575	79, 760	
March	80, 536	50, 346	51, 500	43, 938	61, 905	94, 602	70, 280	
April		57, 650		60, 230	37, 586	60, 565	76, 831	
May	92, 611	272, 635	223, 032	125, 859	50, 604	41, 910	69, 434	56, 642
June	59, 776	137, 000	40, 678	81, 959	74, 779	31, 110	72, 940	77, 814
July	24, 330	58, 000		50, 000	46, 705	63, 957	78, 515	82, 228
August	208, 452			115, 329	45, 235	52, 252	68, 544	90, 090
September	58, 658	154, 050	172, 100		90, 974	54, 658	50, 588	102, 329
October	67, 026	37, 600			87, 866	32, 150	66, 200	89, 179
November	146, 140			100, 882	64, 004	53, 906	102, 830	62, 732
December		154, 602		111, 129	57, 978	48, 700	89, 610	121, 995
Total	898, 629	999, 258	740, 586	807, 205	726, 272	544, 269	866, 699	1, 004, 048

Months.	Stock on 1st of each month.				Price of Atlantic.			
	1882.	1883.	1884.	1885.	1882.	1883.	1884.	1885.
	<i>Cases.</i>	<i>Cases.</i>	<i>Cases.</i>	<i>Cases.</i>	<i>Cases.</i>	<i>Cases.</i>	<i>Cases.</i>	<i>Cases.</i>
January	37, 152	209, 458	664, 507	433, 749	\$2 38	\$2 02	\$1 78	\$1 72
February	66, 662	178, 512	720, 827	422, 081	2 05	1 90	1 82	1 70
March	64, 332	283, 337	747, 252	357, 321	2 20	1 89	1 80	1 68
April	100, 930	271, 688	704, 150	441, 594	2 20	1 88	1 68	1 63
May	40, 700	234, 102	701, 245	364, 768	2 02	1 86	1 71	1 64
June	82, 707	464, 827	854, 843	413, 980	2 00	1 80	1 70	1 64
July	97, 794	570, 717	822, 581	349, 772	1 95	1 80	1 70	1 65
August	75, 329	559, 860	744, 066	317, 544	1 83	1 85	1 68	1 68
September	238, 456	507, 608	675, 522	342, 780	1 95	1 85	1 72	1 70
October	206, 230	607, 105	797, 034	240, 451	1 97	1 79	1 74	1 88
November	185, 278	612, 555	730, 834	151, 272	3 00	1 78	1 75	1 85
December	267, 436	558, 605	628, 004	189, 422	2 02	1 76	1 75	1 85

AMERICAN INTERESTS IN THE EAST.

Generally, Americans transact their business through foreigners instead of having their own representatives here. This custom prevents our own countrymen from coming in direct business relations with the Japanese, and hence they are not known, except through intermediate agencies, which do not represent the American system of doing business. This system, I believe, would be received with great favor by the Japanese, as it carries with it the simplicity and justice of our progressive civilization. Our merchants need never expect to compete successfully for the trade of the East by remaining at home, over 8,000 miles away, and contending for this trade in the way referred to. America produces everything. Her mechanics and ship-builders should not remain silent, and permit other nations to carry off the laurels they could so easily win. Why is it that Germany is extending so rapidly her trade in the East? Why is it that she is contracting with China and Japan to build their ships of war and public works? It is because the Germans are here in the East in person, and attend to these matters themselves. Their great energy and ambition are constantly opening up new fields for the employment of German industry, and they are never idle. England, too, is always represented out here in the persons of watchful officers, and every opportunity is utilized for the advancement of her interest. Wherever the English

flag floats over a consulate, there will invariably be found a printing-press, under the control of English brain, and everything that can add luster to the British name is printed and sent out to the world. To such a powerful and influential agency Great Britain is principally indebted for her success in the East. And when I see Germany and Great Britain exhausting every resource to advance their respective interests, and my own country a comparatively inactive spectator, with her trade falling off, I feel that the fact should be stated, and that it merits serious attention. America is not inferior to any nation. This is admitted and recognized by the nations of the East, and the surprise is great among them that she does not stand abreast in this contest for the trade of the East.

T. R. JEERNIGAN,
Consul.

UNITED STATES CONSULATE,
Hiogo, Japan, June 18, 1886.

CONVENTION BETWEEN FRANCE AND CHINA REGULATING TRADE ON THE ANNAM FRONTIER.

In transmitting the following convention between France and China, Minister Charles Denby writes, under date May 24, 1886:

The endless formalities and restrictions which this convention throws in the way of trade between Annam and China must crush any commerce which may spring up between the two countries.

With the exception of the neutral zone, which is not mentioned in this convention, it is substantially the same as that which was negotiated by Mr. Bourée in 1882, and which the French Government would not ratify.

DRAFT OF TRADE REGULATIONS FOR THE ANNAM FRONTIER JOINTLY DETERMINED ON BY CHINA AND FRANCE.

Whereas in the sixth article of the treaty drawn up by the Government of China and the French Republic upon the 27th day of the fourth moon of the eleventh year of Kuangshii, corresponding to the 9th day of June, 1885, by western reckoning, it is stated that "regulations for the conduct of overland trade between Tonquin and the Chinese provinces of Yunnan, Kuangsi, and Kuangtung, will be jointly discussed and concluded by commissioners appointed by the two powers, and will form a supplement to the present treaty;" and

Whereas in the tenth article of that treaty it is stated that "the provisions of former treaties and regulations agreed to by China and France, except in so far as they are modified by the present agreement, will continue to retain their original validity;" the plenipotentiaries of his Imperial Majesty the Emperor of China and the President of the French Republic, that is to say, the plenipotentiary of His Majesty the Emperor of China, Li, grand tutor of the heir apparent, grand secretary of the wen-hua throne-hall, minister superintendent of trade for the northern seaboard, joint commissioner of admiralty, governor-general of Chi-li, and a member of the first rank of the third grade of hereditary nobility with the laudatory appellation Su-i; and the plenipotentiary of the President of the French Republic, Cogordan, minister plenipotentiary, decorated with the cross of the Legion of Honor of the fourth class, and the star of the second class of the order of the Crown of Italy, and bearing the rank of under secretary of state for foreign affairs, together with Bruwaert, consul of the first class, assistant commissioner for treaty negotiations, decorated with the order of Gustav of Sweden of the third class and the order of Leopold of Belgium of the fifth class, after having communicated to each other their respective full powers and found them to be in due form, have accordingly concluded the following articles:

ARTICLE I.

It is arranged between the two Governments that whereas in conformity with the provisions of Article V of the new treaty two places should now be indicated, one some

point above Pao-shéng (Laokai), the other some point to the north of Langson, at which the Chinese Government shall establish customs for purposes of trade, and shall consent to the (immediate) appointment of consuls by the French Government at those places, and these French consuls shall enjoy the same privileges and advantages of the most favored nation.

Inasmuch as at the present date of signature the boundary commissioners of the two Governments have not yet determined at what point north of Langson a trading center should be opened, it shall be incumbent on the Chinese Government to select such place in consultation with the French representative in China within the present year. As regards the place to the north of Laokai to be opened to foreign trade, this shall also be fixed upon in consultation when the frontier of the two countries shall have been inspected and determined.

ARTICLE II.

The Chinese Government is at liberty to establish consuls at Hanoi and Haiphong, and shall hereafter consider with the Government of France the appointment of consuls to reside at the large cities or towns in other parts of Tonquin. The treatment accorded by France to such consuls and the privileges and advantages enjoyed by them shall be similar in every respect to the treatment and privileges accorded by France to the consuls of the most favored nations. They shall transact their official business with the high officer (or officers) appointed by the French Government as "protector" (or protectors).

ARTICLE III.

Both Governments undertake, that upon the arrival of a consul appointed by either power to take up his official residence, assistance shall be rendered by the local authorities of either Government in the establishment or preservation of the public offices in which he shall reside.

When French merchants or citizens visit the places open to trade on the Chinese frontier, the action taken shall be in all cases that laid down in the seventh, tenth, eleventh, and twelfth articles of the treaty between France and China, dated the 27th day of June, 1885.

When Annamese subjects visit the places open to trade on the Chinese frontier the same treatment shall be accorded them by the Chinese Government.

ARTICLE IV.

Chinese subjects shall be permitted to purchase land, rent houses, or establish places of business or warehouses in any part of Annam, and shall receive full protection for their persons and property.

They shall on no account be treated with harshness or tyranny, nor shall any restraint be put upon them; there shall be no difference whatever between the treatment accorded to them and that enjoyed by the subjects of the most favored Western nation. The official or private correspondence and telegrams of Chinese officials and merchants despatched or received through the French postal or telegraph offices shall be sent and delivered in the same manner as other correspondence, and shall not be subjected to any hindrance. The treatment of French citizens by the Chinese Government shall be equally liberal in this respect.

ARTICLE V.

In the event of French citizens or persons under French protection, as well as the subjects of other nationalities residing in Tonquin, wishing to cross the frontier into Chinese territory, the French authorities shall satisfy themselves of the respectability of such persons and shall then apply to the Chinese frontier officials to issue a passport. When furnished with such passport they shall be allowed to proceed, but it must be surrendered for cancellation upon their return. In every instance in which the holder of a passport is compelled to pass through the territory of tribal chieftains or aborigines, the fact must first be recorded on his passport, that as there are no Chinese officials in the places in question protection cannot be afforded.

In the event of Chinese subjects in China wishing to proceed by land from China to Annam, the Chinese officials shall satisfy themselves of the respectability of such persons and shall apply to the French officials for the issue of a passport, the action taken being in every respect similar to that required in the case of French subjects entering Chinese territory. The passports issued by either party shall be used simply for purposes of travel and shall not be allowed to be employed as a voucher for the purchase or sale of commodities and exemption from duty thereon.

In all cases of persons crossing the frontier without being furnished with a passport the Chinese local authorities shall, in the case of China, be at liberty to detain such person, and in the case of Tonquin, the French authorities shall be allowed to do likewise, respectively handing him over to the authorities of his own nationality, who shall deal with him as they may consider necessary under the circumstances.

In the event of Chinese subjects who are temporarily residents in Annam returning from Tonquin to China, all that will be required is a certificate from the Chinese authorities permitting them to cross the frontier.

French citizens and others at the places on the frontier open to trade will not be required to apply for a passport when traveling in localities less than fifty *li* distant from such places.

ARTICLE VI.

All imports conveyed by French merchants and citizens, or persons under the protection of France, to the places upon the frontier open to trade which shall already have paid the import duty may forthwith be taken into Chinese territory for sale in accordance with Article VII of the rules appended to the tariff and the general rules in force at the various maritime customs for the conveyance of foreign goods into the interior under transit pass.

Upon the arrival of foreign goods of any description at the custom-houses at the two places, to be hereafter determined, on the Yunnan and Kuangsi frontiers, a report shall be furnished containing a description of the goods, with specifications of their number and the name of the importer, whereupon an agent of the customs shall be sent to inspect the goods, which, upon verification of the description given, shall pay a regular duty equal to one-fifth less than that laid down in the Chinese maritime tariff. In case of goods not enumerated in this tariff, regular duty shall be levied at the rate of five per cent. *ad valorem*; but the regular duty must be paid in full before the goods can be removed from the places where they are stored, transferred to other conveyances, or sold. Should the merchant concerned wish to convey the goods into the interior, he must once more report them at the customs and must pay the half inland duty, as prescribed in the maritime customs tariff; nor can the levy of such half duty be calculated as one-half the regular duty minus twenty per cent.

After this half duty has been paid, the customs will issue a duty certificate, entitling the holder to take the goods to the place indicated thereon for sale. No further levy of duty will be made at any customs station or barrier the goods may encounter, but any goods conveyed into the interior which are unaccompanied by such certificates, will pay duty and *likin* at any customs station or barrier they may come to, in accordance with the rules governing local produce.

ARTICLE VII.

All French merchants or citizens or persons under the protection of France, proceeding to any place in Chinese territory and purchasing local products which are conveyed to the places open to trade on the frontier for export therefrom into Tonquin shall be allowed to do so under the conditions laid down in Article VII of the rules appended to the tariff with regard to the conveyance of native produce for export.

Native produce of any description conveyed from the provinces of Yunnan and Kuangsi to the places open to foreign trade to be hereafter determined, shall upon arrival at the customs at these places be reported thereat, the report containing a description of the goods, with their numbers and the name of the person conveying the goods. An agent of the customs shall thereupon be sent to inspect the goods and verify the description. In the case of the merchant in question having previously taken out triplicate pass with which he has gone himself into the interior to purchase goods upon which he has not paid the inland duties or *likin*, he will be required, in conformity with the Chinese maritime tariff, first, to pay the half duty, and then, to pay a regular duty equivalent to two-thirds of that prescribed by the Chinese maritime tariff. In the case of articles enumerated in the tariff, a regular duty will be paid on the basis of 5 per cent. *ad valorem*. This regular duty paid, the goods may be warehoused and transferred to other conveyances for transport and sale beyond the barrier.

Should the merchant in question enter Chinese territory and buy native produce without having taken out a triplicate pass, the proper duty or *likin* thereon will have to be paid at all customs stations or *likin* barriers which the goods may pass, the stations or barriers issuing certificates or vouchers for these payments. On arrival at the frontier customs, the goods will be exempt from half duty upon production of these certificates from the inland stations and barriers.

All carts and animals belonging to French citizens or others which pass the frontier customs stations of Yunnan and Kuangsi, inwards or outwards, as well as the carts or animals conveying the goods of Chinese subjects either into or out of Tonquin, shall one and all be exempt from taxation. The boats of either country passing the frontier station by waterways accessible to boats, may be called upon to pay tonnage dues in accordance with the rules prevailing at the various maritime customs [of China].

It is agreed by both Governments, with reference to the foregoing articles Nos. VI and VII, that in the event hereafter of any other power arranging a separate frontier trade tariff for the land routes on the southwest of China with the Chinese Government, the French Government can likewise claim similar advantages.

ARTICLE VIII.

Foreign goods, upon arrival at one of the frontier custom-houses, which shall have already paid the regular import duty and shall, in consequence of not being sold, be conveyed to the other frontier customs-house, may, within the space of thirty-six months, if on inspection the original goods have not been opened or changed, receive an exemption certificate for the regular duty from the first custom-house, which shall be allowed to be tendered at the second custom-house in satisfaction of the duty leviable thereat, or a drawback certificate may be given which will be available for payment of duties at the custom-house by which it is issued any time in three years, but in no case will ready money be returned.

Should such foreign goods be taken from thence to a Chinese treaty port the usual regular maritime import duty on such foreign goods will be levied, and with a view to the avoidance of confusion neither this frontier customs drawback or exemption certificate nor the frontier customs duty receipt will be allowed to be tendered in lieu thereof. No drawback certificate will be given for goods upon which the half inland duty has already been paid in accordance with the rule prevailing at all the ports.

ARTICLE IX.

Native produce which has already paid the half and regular export duty at one frontier custom-house, and shall be taken to the other frontier customs for sale, shall only pay a second import duty, amounting to half the regular duty already paid, but in conformity with the established rules prevailing at all the ports, it shall not be conveyed into the interior by foreign merchants for sale. Such native produce upon importation into any maritime treaty port for sale, shall in every instance be dealt with in accordance with the tariff on foreign imports, and another regular duty be levied thereon. If it be conveyed into the interior it will still have to pay the inland duty.

In the case of native produce exported from a Chinese port into a port of Annam, and from thence again taken to the Chinese frontier, it will upon arrival have to pay a regular duty in like manner with foreign goods, and inland duty again upon entering the interior.

ARTICLE X.

Upon the arrival of goods, whether exports or imports, at the frontier customs application must be made for the inspection thereof within a period of thirty-six hours.

Should the goods not have been reported within this limit, a fine of tls. 50 shall be levied for every day's delay, but such fines shall not exceed tls. 200 in the aggregate.

Should accurate proof be obtained of an intent being present to defraud when passing the goods over the frontier by reporting less than there actually are for duty with the object of securing a reduction on the amount levied, the whole of the goods shall be confiscated. All goods which, unaccompanied by a permit from the superintendent of customs, are clandestinely conveyed across the frontier, or discharged, or sent round by circuitous routes, or broken up into parcels for sale, or attempted to be smuggled in any other way, shall be liable to confiscation.

Any merchant applying at the customs for a transit pass who shall, with intent to defraud, furnish a false statement of the description or number of his goods, or whose declaration of the place of origin and destination show discrepancies, shall have all such goods confiscated. As regards the manner of investigating such cases, the course of action to be pursued shall be that laid down in the regulations bearing date the 29th day of May, 1868.

In the case of goods condemned to confiscation, should the merchant wish to pay the value thereof to the authorities he will be permitted to do so at a valuation arrived at with the Chinese authorities.

The Chinese authorities shall be at liberty to adopt the means that they may judge most proper for the prevention of smuggling along the Chinese frontier.

Chinese, French, and Annamese boats or junks plying on the water-ways shall not be required to discharge their cargoes ashore upon passing the barriers of either power, if the pass and cargo correspond, and there are no other irregularities. The customs will only send an agent on board to inspect the goods.

ARTICLE XI.

Chinese produce entering Tonquin from the land side shall pay import duty in accordance with the French customs tariff, but all such produce intended for export, shall be exempt from duty.

Should the French Government hereafter frame a new customs tariff or rules for Tonquin, these shall be duly communicated to the Chinese Government, and if in time to come special duties shall be fixed in Tonquin upon certain classes of local products worked up into manufactures, or upon "certified" gold or silver, Chinese articles of the same description shall be similarly taxed upon importation into Tonquin.

ARTICLE XII.

All native produce passing through Tonquin in process of conveyance from one Chinese frontier customs to the other, and all native produce sent back to China from either frontier customs by way of any seaport in Annam, shall pay the transit duty for Tonquin laid down in the French tariff, but such transit duty shall not exceed 2 per cent. ad valorem.

The above produce shall after leaving Chinese territory be inspected by the French customs, who will issue a certificate which shall contain a specification of the goods, and of the number and destination thereof. The holder of this certificate will produce it at the demand of any French official *en route*, and also on arrival at the maritime port. With a view to the prevention of smuggling, all such produce shall pay the regular import duty in advance upon entry into Tonquin. A receipt for this duty will be issued by the French customs, which will be presented for inspection on the arrival of the goods at the seaport or frontier customs, as the case may be. The French customs will then deduct the transit duty from the regular import duty, and return the balance to the holder of the receipt, who will thereupon surrender his receipt for cancellation.

Inasmuch as the arrangement for the transit of this native produce across Tonquin is a novel one, should proof positive be discovered that the merchant concerned has, with intent to defraud, made a false declaration of the description and number of his goods, or should the place of origin and destination be found not to correspond with the particulars given, the whole of such goods shall be confiscated.

Should the merchant wish to pay to the authorities the money value of goods condemned to confiscation he is at liberty to do so, at a valuation arrived at with the French authorities.

The arrangement specified above for taxation *in transit* shall be applied to all Chinese produce *in transit* through Annam that is exported through any maritime customs establishment to a seaport in Annam and thence conveyed through Tonquin to the Chinese frontier customs.

ARTICLE XIII.

The following articles shall be granted a duty exemption certificate by the Chinese frontier customs on either importation or exportation, provided that they are found after inspection to be of *bona fide* foreign origin, are for the personal use of foreigners, and are in reasonable quantities:

Gold and silver bullion, foreign coins, flour, Indian meal, sago, biscuits, preserved meats and vegetables, cheese, butter, confectionery, foreign clothing, jewelry, plated ware, perfumery, soap of all kinds, charcoal, firewood, candles (foreign), tobacco, cigars, foreign wine, beer, spirits, household stores, ship stores, personal baggage, stationery, carpeting, druggoting, cutlery, foreign medicines, and glass and crystal ware.

But if such articles are not reported for inspection, or if they are clandestinely conveyed elsewhere, the same penalties will be enforced as those provided in the case of foreign merchandise.

If imported into the interior with the exception of gold and silver bullion, foreign coins and personal baggage, they will, in spite of the fact that they are for the personal use of foreigners and insignificant in quantity, pay an inland duty at the rate of 2½ per cent. ad valorem.

Chinese subjects passing the Tonquin frontier customs outwards or inwards, will not be required to pay duty at the French customs upon any money, personal bag-

gage, clothes, jewelry, pens, ink, and stationery, books, personal appliances or articles of food they may have with them.

All articles imported by Chinese consuls for their personal use will, similarly, be free from duty.

ARTICLE XIV.

Both Governments engage that neither foreign nor native opium shall be allowed to be conveyed overland across the frontiers of Tonquin and Yunnan, Kuangtung, and Kuangsi, for purchase or sale.

ARTICLE XV.

The export of rice or other grain across the Chinese frontier is prohibited; but if imported through the Chinese frontier customs, it will be exempt from duty.

The import of gunpowder, shot, fire-arms, cannon, saltpeter, sulphur, and spelter, together with all munitions of war, salt, or any articles destructive of morality, is forbidden under penalty of entire confiscation.

Munitions of war procured by Chinese officials or by merchants who have received special written authority to purchase such, must be inspected and duly verified at the customs before they can be allowed to pass.

The Chinese high authorities will be at liberty hereafter, after consultation with the French consuls, to pass arms and munitions of war through Tonquin across the frontier, and, under these conditions, they shall be entirely exempt from duty at the French customs.

Similarly the import is prohibited into Tonquin of all arms and munitions of war, together with any articles destructive of public morality.

ARTICLE XVI.

Chinese merchants and subjects temporarily residing in Annam, who may be concerned in cases of homicide, revenue cases, or litigation generally, shall receive the same treatment as that accorded by France to the merchants and subjects of the most favored nation.

Disputes between Chinese subjects and French citizens or Annamese residing at the places on the frontier open to trade, shall be jointly tried by Chinese and French officials.

Offenses, whether serious or trifling, committed by French citizens or persons under French protection at the places open to trade, shall be dealt with in the manner laid down in articles 38 and 39 of the treaty of 1868.

ARTICLE XVII.

If Chinese subjects at the places on the Chinese frontier to be opened to foreign trade, who are guilty of any offense whatever against the laws of China, shall take refuge in French houses or on board French ships, or in the houses or ships of persons under the protection of France, upon the official application of the local authorities to the consul, and upon the particulars of their guilt being ascertained, steps shall be taken to seize and forward them to the Chinese officials for trial and punishment.

If criminals, subjects of China, shall take refuge in Annam they shall upon due requisition by the Chinese authorities addressed to the French authorities, be searched for, and on proof of their guilt, be delivered up in the manner provided for in the extradition treaties entered into between France and the most favored nation.

In the event of crimes committed by French citizens or persons under French protection, should the accused take refuge in Chinese territory, the Chinese authorities shall, upon requisition addressed to them by the French authorities, and upon proof of his guilt, take steps to secure such person and deliver him to the French authorities for trial and punishment. These persons shall not be harbored or concealed in the smallest degree by either party.

ARTICLE XVIII.

In cases in which provision has not been made in the present articles for the regulation of land frontier trade, action shall be taken in accordance with the Chinese maritime customs trade regulations, or in a manner consistent with the general provisions of existing treaties.

In the case of other matters upon which no arrangement has been determined the authorities of both Governments shall apply to their respective countries for instructions.

Should any addition to or revision of the foregoing articles hereafter be found necessary, such addition or revision shall be decided upon in consultation, at the expiration of ten years from the exchange of ratifications in the manner provided for in Article VIII of the new treaty.

ARTICLE XIX.

The present trade regulations shall be published in China, France, and Annam, and shall come into force as soon as they have been ratified by both Governments, and, as before, the ratification shall be exchanged at Peking, at the latest within one year from the date of signature Kuang Hsi, twelfth year, third moon.

APRIL 25, 1896.

WHEAT AND SILK IN ASIA MINOR.

REPORT OF CONSUL-GENERAL HEAP, OF CONSTANTINOPLE.

In my report on the economic condition of Turkey I made reference to the disabilities under which producers in the interior labor from the want of transportation to the seaboard. I cannot give a better illustration of these disabilities than by quoting some statements from a correspondent in Asia Minor. They show the hopeless condition of agriculturists in that region as long as the Government denies them economical means of bringing their produce to a market.

In the district of Castamoni wheat is worth 8 cents per bushel. The average price of wheat in England is about \$1 per bushel, or just twelve times as much as it is worth in Castamoni. The carriage by railroad from Kastamounnee to Samsoon, a distance of 150 miles, would not exceed 12 cents; and 15 cents per bushel would, at present rates, be a high freight from the Black Sea to England. Add 9 cents per bushel for charges on this side—a rather high estimate—and 9 cents a bushel for selling charges in England, and the result shows that wheat at Kastamounnee ought to be worth, not 8 cents per bushel, but from 48 to 56 cents. It follows that, owing to want of means of transportation, the grain produce of Asia Minor only brings to the grower one-sixth, at most, of its real value on the spot where it is grown, and that five-sixths of that value is lost to him. Kastamounnee is in a great grain-producing region, only a small portion of which, under these discouraging circumstances, is cultivated; and it does not require a very lively imagination to conceive the change that would be brought about in the impoverished districts of Asia Minor if the value of the main staple of produce were sextupled.

Correspondence from Trebizond says that the carriage road from Erzeroum has been badly damaged by heavy rains, but so promptly repaired that traffic has not been interrupted. The distance is about 125 miles. Very few wagons, however, are to be seen on this road this year, and scarcely a carriage. Ox carts move almost everything at present, and great numbers of these arrive loaded with grain from Erzeroum and Balboort. It is last year's crop that is coming forward, but the prospect of an abundant harvest this year makes grain so cheap that speculators can gain something by buying in the interior and forwarding it to the coast even though transport costs them three times the price of the grain. If the farmers deliver their own grain at Trebizond, they receive for all this labor but a trifle more than they might receive at their own doors were there good transport facilities. The loss is not only to the producers. The tithes of the Government would, but for its short-sighted policy, be four or five times as great as they are at present.

NEED OF RAILROADS.

The prosperity that the construction of railroads in Asia Minor would bring to the people would be very great. Labor in that region is a drug in the market. A strong, laborious, sober, healthy, and numerous population is doomed to idleness or inactivity and poverty for lack of employment. It would be difficult to find in any part of the world a finer race than the peasantry of Anatolia.

The country abounds with coal, iron, and other minerals, and labor is cheap. Forests in many parts cover the soil. The country is generally hilly and in some districts mountainous, with rich, well-watered valleys. The climate is temperate and, with the exception of a few localities, healthy. On the upper plateaus there are heavy falls of snow and the winters are frequently severe. In no part of the world are the materials for soil-road building—stone, timber, iron, and coal—more abundant and of easier access.

It is, of course, of no concern to the United States that a country which produces one of our staples of exportation should refuse to avail itself of all the advantages nature has lavished on it. I only mention these facts to show the stubborn resistance of the Turks to all progress, while they see around them the feverish activity of Europe in promoting the means of intercommunication between nations. The Turk feels that although he can hold his own with some chance of success on the battle-field against the pressure of Europe, he is at a sore disadvantage when he comes in contact with its civilization. He instinctively feels that if he opens his country to works of science and art, in which he has no capacity to take a part, there will be an inrush from the north and the west, and that in the unavoidable, even if peaceful, struggle of conflicting races that will ensue, his chance of survival will be small.

SILK HARVEST OF ADRIANOPLE.

It may be of some interest to our silk manufacturers who import the raw material from Turkey to know that the silk harvest in the province of Adrianople has been very satisfactory. In quantity it exceeds that of last year by about 20 per cent., and the quality is said to be superior, the white and yellow French cocoons taking the place more and more of the green Japanese of old times.

PORT OF BATOUM.

A considerable stir has been made recently in consequence of the decree of the Emperor of Russia annulling the article of the treaty of Berlin establishing a free port at Batoum.

It is a question that has but little interest to us either politically or commercially. Our trade with Persia, which might have gone by Batoum to Baku by rail and thence by steamer to Recht, a Persian port on the Caspian, was diverted to Trebizond, and thence overland by the substitution of restrictive for transit duties by the Russian Government. This was done to exclude English, French, and German goods from Persia. A railroad from Trebizond via Erzroum to the Persian frontier, besides serving as a channel for the exportation of home produce, would greatly increase the trade of the United States and Western Europe with Persia and take away all that remains of the traffic that now goes by the Batoum, Poti, Tiflis, and Baku roads. There will continue to be an active interchange of correspondence in regard to the

port of Batoum between the signers of the treaty of Berlin, but it will end in Russia having her own way, and besides erecting formidable fortifications at Batoum in defiance of the stipulations of that treaty, she will annul its privileges as a free port. Whatever advantage these privileges may have brought the town, they were in great measure neutralized by the heavy tariff dues levied on goods that left Batoum for the interior, the exemption from duties which made it a free port extending only to goods landed in the town, and consumed there, those exported inland paying duty.

G. H. HEAP,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Constantinople, July 20, 1886.

CEYLON TEA.

REPORT OF CONSUL MORRY.

The cultivation of tea in this island was adopted, mostly, after the failure of the coffee enterprise began to be regarded as an impending fact, and was persevered in with such spirit that now much of the ruin consequent on the threatened disappearance, practically, of the "fragrant Arabian bean," as a Ceylon product, has been obviated, or at least largely modified. My present object in alluding to the subject is to call, if possible, the attention of tea consumers to the excellence and cheapness of this new Ceylon product, the purity alone of which, in these adulterative times, is a strong enough recommendation for its general use in preference to the highly-faced teas of China.

It is reported, with how much truth I don't know, that certain shipments of Assam tea, sent to New York a year or two ago, were bought up by a syndicate and reshipped to London. If this was actually done by the dealers in China tea, no one could blame them, for good Assam tea, far superior in my opinion to ordinary China tea, can be sold in America at prices far below what the last-named variety is fetching, and once the people were to acquire a taste for it Assam tea would largely displace that now coming from China and Japan.

THE CEYLON TEA.

The same is true of Ceylon tea, which needs only to be known to be appreciated; for it is in the opinion of many superior to Assam or any other Indian-grown teas, and possesses a delicacy of flavor, when properly brewed, peculiarly its own. An infusion of five minutes distills from it a delightful beverage; and a longer maceration, say for fifteen minutes, produces a pungent liquor strong enough to almost make one's hair stand on end.

The desirable quality first named is owing probably in some measure to certain elements in the soil of Ceylon, conducive to the development of delicate spices and perfumes; the cinnamon here, for instance, being far famed for superior excellence, and the nutmegs for a surprising amount of aroma. Some of the commonest weeds, even, are strongly aromatic, and the wild grasses yield valuable essential oils.

The prime cause, however, of the unusually delicious aroma of Ceylon tea lies in the judicious preparation of the article, which, after plucking,

is handled and cured entirely by delicate machinery in such manner as obviates much bruising of the tender leaflets, thus preserving their active principle and pure essence, to be brought out perfectly by a simple and brief application of boiling water.

There is, however, as before written, a latent strength in this tea, which a little steeping soon develops, and those who like their drink strong have only to let it stand an additional ten minutes to obtain a liquor powerful enough for any tea drinker.

Formerly, when the tea enterprise was in the hands of novices, the product suffered greatly from bad manipulation by hand, which bruised the leaves, causing a large loss of their fragrant and most valuable constituents. In those days it was common to carelessly stuff the gathered leaves into gunny sacks for conveyance many miles across country through rain and sunshine, to some supposed more favorable, on account of climate, locality for curing. This caused much bruising, fermentation, and radical chemical change, finally resulting in the production of an article unworthy the name of tea.

Now all is different, for every large estate has its own tea-store, often quite palatial in extent and appearance, and a perfect manufactory in itself, full of ingenious mechanical appliances for withering, rolling, and drying the tender unbruised leaf, immediately it is plucked, into merchantable tea, and packing it into lead-lined boxes for shipment.

Proprietors of smaller and younger properties not yet possessed of tea-houses are likewise given access to those of their more advanced neighbors, and thus is secured to all an almost uniform excellence in the preparation of Ceylon teas which is of great value.

VARIETIES OF CEYLON TEA AND PRODUCTION.

The chief varieties of Ceylon tea are "Orange Pekoe," "Broken Pekoe," "Pekoe Souchong," "Mixed Tea," and "Dust," which are packed for shipment in boxes or chests containing each from 5 to 80 pounds.

About one-quarter of the whole outturn is made into "Orange Pekoe," the other three-quarters into "Broken Pekoe" and "Pekoe Souchong." Good dust tea is mostly composed of the minute fragments of tender tea leaves broken in handling; it therefore frequently contains the quintessence of tea, and sometimes fetches better prices at public sale in Mincing Lane than some unbroken teas. I don't know if it is used for making brick tea, which the Russians use so largely, but feel sure it would well answer such a purpose.

The total Ceylon tea product in 1885 was 4,353,000 pounds, being an increase of about one hundred fold in five years, the figures being approximately as follows, viz:

	Pounds.
1880	44, 000
1883	933, 000
1884	1, 064, 000
1885	4, 353, 000

The shipments for the present calendar year will probably exceed 6,500,000 pounds.

The increase in the production of 1885 over 1884 is the most marked feature in the foregoing statistics, and simultaneously with that increase there occurred a fall in the price of tea in Europe sufficient to preclude its profitable growth but for the fact that its manipulation by machinery renders production cheaper than formerly; besides it is now carried

abroad at lower rates, owing to freight competition among steamers since the opening of the Suez Canal.

Hitherto no consistent effort has been made to introduce Ceylon tea into the United States, but latterly both producers and exporters are casting their eyes in our direction.

Within the last few days a small shipment—58 half chests of fair quality, I believe—has been cleared for New York, and I now hear of a carefully assorted consignment from the great “Maria-walte” estate itself being in course of preparation for America.

These shipments, I trust and believe, are but forerunners of a considerable trade; for I hear that the Planters’ Association has determined to make a special effort towards pushing their teas in America, and I am aware that several local merchants are similarly inclined. In fact, I am frequently applied to now for advice about shipping tea to the United States, and I invariably reply, “Go ahead; only send good stuff.”

W. MOREY,
Consul.

UNITED STATES CONSULATE,
Colombo, Ceylon, June 18, 1886.

PROPOSED TEA SYNDICATE.

HEATHERTON, AMBEGAMUWA, CEYLON, *May 29.*

DEAR SIR: To bring the suggestions which have been made in the local papers as to the advisability of extending our markets for the sale of Ceylon teas to a practical issue, I have the pleasure to forward you the draft of a proposal I have drawn up for forming a syndicate under the auspices of the association.

It has been urged by some that such a scheme is premature, as Great Britain can easily take and consume the few million pounds we send into the London market. This is undoubtedly true at the present moment, but as this island in a few years will produce five or six times its present outturn, and there will be an increased export from India from the large areas put under tea in 1882-’83, I consider that we cannot begin too soon to make the American and Canadian peoples acquainted with our teas.

If this scheme proves successful in creating a demand for our teas, and that demand be carefully fostered, a trade may spring up which will relieve us of a large proportion of our outturn, and consequently assist in maintaining a steadier price for our teas in the London market. This trade will take a few years to develop, but should a development take place the demand for the tea will come to us when we shall most require it, viz, when our shipments are too heavy to be worked off in the home market.

I place my views on the subject before you, so that you may put them in the hands of members of committee, in order that they may consider the subject before our next meeting.

To initiate the scheme a few estate names have been put down in a list herewith sent to you, and these estates are prepared to give it support. I may add that the list has not been circulated in any district.

Yours, truly,

H. K. RUTHERFORD,
The Secretary Ceylon Planters’ Association, Kandy.

CEYLON TEA SYNDICATE.

[Proposal as drafted by Mr. Rutherford.]

(1) That a Ceylon tea-planters’ syndicate be formed under the auspices of the Planters’ Association for the purpose of pushing the sale of our teas in markets other than that of Great Britain.

(2) That as it is to the interest of growers (however small their outturn may be) to extend the field for the sales of Ceylon teas, it is hoped that every grower of the products will join this syndicate.

(3) That members supply the syndicate with such quantities of tea as they deem fit to foster the scheme of introduction into other countries.

(4) That the secretary of the Planters' Association be asked to become the secretary of the syndicate, and for which work he be paid 1½ cents per pound of tea, which sum must cover shipping charges, exclusive of freight and insurance. This method is suggested so that the burden of the cost of the scheme may be evenly distributed among members.

(5) That agents be appointed in New York, Montreal, Quebec, Melbourne, Sydney, and Dunedin, who have no interest in the sale of Japan or China teas; these chief agents to appoint subagents in the principal towns of America, Canada, Australia, and New Zealand, whose business it will be to distribute the teas in small parcels and lots to grocers and private individuals; agents to be paid by commission on sales.

(6) Teas supplied by the syndicate to be consigned to the chief agents, and when proceeds have been realized they are to be remitted to the secretary, who shall remit to members of syndicate.

(7) The names of likely persons or firms in America or the colonies, known to planters or Colombo merchants, who would be likely to take an interest in the sale of these teas, are requested.

(8) Private parcels of tea to American or colonial relations or friends to be sent through the syndicate.

(9) Great care should be taken by all members of the syndicate to ship nothing but really good teas.

(10) That before any shipments are made full particulars be received from the appointed agents of the syndicate, giving full instructions as to the class of tea required and size of packages most suitable, the quantity required to open up connections, the likelihood of success, and all information which may be useful to the syndicate.

(11) Each member, in forwarding tea, to state to which country he wishes his teas consigned.

(12) All teas, before shipment, to be examined, tasted, and reported on by an expert, whose fees will be paid by the member shipping the tea.

Lists of estates prepared to join in a syndicate under the auspices of the planters' association for the introduction of Ceylon teas into America and the colonies, should a scheme for such be sanctioned by the planter's association on the lines roughly sketched out by Mr. Rutherford in annexed draft proposal.

Signatures to this list do not bind any one to become a member of the syndicate should the scheme afterwards be altered and not then meet with their approval.]

Estate.	Quantity.	Remarks.
	<i>Pounds.</i>	
Dunedin (Avisawella)	5,000	} Will supply in two installments from each estate.
Mariawatte (Gampola)	5,000	
Sembawatte (Nawalapitiya)	5,000	
Dewalakande (Avisawella)	5,000	
Torwood (Kalutara)	1,000	
Tillyrie (Bogawantalawa)	1,000	
Scrubs (Nuwara Eliya)	1,000	
Wallaha (Lindula)	1,000	
Rogart (Kalutara)	1,000	

Approved for the Ceylon Company's estates, though I am not at present in a position to promise definite quantities.

JOHN H. STAREY.

I approve of the scheme, but at present cannot say more than Mr. Starey.

JAS. HILL,
For Messrs. Carson & Co.

TARIFF REVISION IN AUSTRIA.

REPORT OF CONSUL-GENERAL JUSSEN, OF VIENNA.

THE CHANGE OF THE TARIFF ON MINERAL OIL.

As I have already stated in a previous dispatch, the increase of the duty on crude petroleum will result to the benefit of crude American petroleum, for the reason that this oil can be imported under the classification upon which a duty of 1.42 florins per 100 kilograms is imposed, while the Russian petroleum, which is imported in a partially refined state for the Hungarian refinery at Trieste, will be admitted only under a classification on which a duty of 3 florins per 100 kilograms is imposed. This tariff I understand to be the result of a compromise between the Hungarian and Austrian Governments, and I am credibly informed that the Polish members of the Reichstag are determined to vote against the whole tariff amendment unless the proposition in question is passed. They demand this discrimination against the partially refined Russian petroleum, first, as a protection to the Galician petroleum industry, and, secondly, because the Russian petroleum thus far imported into Fiume was in truth and in fact not crude oil, containing 85 per cent. of petroleum and 15 per cent. of tar, and was purposely prepared to defraud the revenue, and wrongfully admitted at the old rate of 1.10 florins per 100 kilograms, under the classification of crude petroleum.

OPPOSITION TO THE NEW TARIFF.

The reasons furnished by the Government for the increase of the tariff have failed to satisfy the opposition, and the arguments upon which these prohibitive tariff rates are based are severely criticized and mercilessly analyzed by a portion of the public press.

Among the principal items affected by the tariff amendment are: Agricultural products, cattle, and provisions. These items are raised to a level with the German tariff; the duty on Indian corn has been doubled; on barley, oats, and wheat trebled; rye is to pay six times the former duty; malt and flour two and one-half times the old rates.

The Government argues that without this increase on breadstuffs there would be imminent danger that Austria-Hungary would become the objective point of the export movement of Russia and the trans-Atlantic countries. The opposition answers that the export of grain from Austria-Hungary in its very existence and development depends upon the importation of certain qualities of cereals from the neighboring countries, and that Austria-Hungary is only able to spare certain better qualities of grain if the cheaper qualities can be imported. And if the importation of certain cheap qualities of grain from Roumania, Russia, &c., is prohibited, then Austria-Hungary will not be in a position to export its high graded wheat to Germany, France, Belgium, &c., because it will need it for home consumption. And furthermore, if the importation of Indian corn and rye were made impossible by a prohibitive tariff, that exportation of barley and oats to foreign countries must necessarily cease.

And from these premises the conclusion is drawn, that the new tariff will have no other effect except to increase the price of bread at home.

and to place an additional burden upon the shoulders of the laboring and industrial classes, and that only the land-owner can possibly profit by this prohibitive policy. It is claimed that this policy and its unavoidable consequences present a glaring contrast to the politico-socialistic efforts of the Government to better the condition of the laboring classes by legislation providing for laborers invalid funds, limiting the hours of labor and abolishing labor on Sunday, &c., and that between the two policies there exists an irreconcilable inconsistency.

As to increased protection of manufactures it is urged that a worse time for this venture could not possibly have been chosen. That in times of universal depression and in the midst of a crisis, the industries of a country cannot be artificially nursed by a high protective tariff, and that a wise Government would have awaited peaceful times and universal prosperity, and that the inevitable result will be a new burden for the consumer, not for the benefit of the state but for the sole profit of a few industrial proprietors.

EDMUND JUSSEN,
Consul-General.

UNITED STATES CONSULATE-GENERAL,
Vienna, May 25, 1886.

CULTURE AND COMMERCE OF FRUIT IN HONDURAS.*

REPORT OF CONSUL BURCHARD, OF RUATAN.

The cultivation of tropical fruits for export to the United States constitutes the chief industry and about the only source of trade and revenue in this consular district. It was commenced only a score of years since, in a very small way, and although it has received no special encouragement or protection, and has been carried on without any regard to system or order, it has grown spontaneously and has gradually monopolized the labor and enterprise of these inhabitants.

Our fruit trade with Honduras was first started in the Bay Islands (Ruatan, Utilla, and Bonacca), and for several years was carried on with sailing vessels only, small fishing schooners, which came down here after the cod season was over on the Banks, and purchased bananas and other fruits from these islanders for the New Orleans market.

The business was very profitable both to the producers and the shippers, and those good old times are recalled and described with as much enthusiasm as old Californians relate the wonderful and romantic events of 1849. These islands were then virtually sovereign and independent.

The inhabitants, English creoles, with a sprinkling of nearly all nationalities, made their own laws and elected their own officers.

The taxes were light, and the port charges and duties on imports merely nominal. The traffic in rum and tobacco, now monopolized by the Government, was free, and the arrival of a "fruiter" from New Orleans was celebrated with bacchanalian orgies, in which master, crew, and islanders all united. Fruit was abundant and in constant demand at high prices. American gold and silver were plentiful. Trade was brisk and lucrative. The people, with merely an apology for labor, were able to purchase and enjoy nearly all kinds of imported luxuries.

* In continuation of Consular Reports No. 65, July, 1886, page 213.

In 1878 the pioneer steamship in this trade made its first appearance in Ruatan. The principal owner commenced the fruit business by peddling bananas in a basket through the streets of New Orleans, and is now one of the wealthiest men of that city, and the largest fruit importer of the South. He has four steamships running regularly, and making on an average two trips each monthly, between this district and New Orleans.

About the same time (1878) fruit culture was commenced on the mainland of Honduras, a few leagues southward from these islands, where it has increased with great rapidity and has become the controlling industry of the coast, giving very profitable employment to all who work. This large production of fruit on the main land, where the land is more fertile and costs nothing, has, in combination with other causes, seriously depressed and retarded the prosperity of the Bay Islands. By a routine of the same crops for a series of years, without the employment of either plows or fertilizers, the soil of the islands has become impoverished, and the fruit now produced is inferior to that of the main. The bunches of bananas are smaller, although the flavor of the fruit is pronounced by connoisseurs to be superior. The islands still maintain a large advantage over the coast in the production of cocoanuts, and this alone saves them from being abandoned by the fruit vessels. The planters generally manage to make the cocoanuts sell their bananas, by holding the former until they can dispose of both to the same shipper. The islands also supply the largest part of the plantains, limes pineapples mangoes, &c., which are taken by the vessels. The fruit districts of the coast are open roadsteads, and large vessels have to anchor a long distance from the beach. Bananas have to be dragged through the surf to canoes and lighters, which convey them to the ships. The process of receiving cargo is slow and laborious, as some six or seven different places along the coast have to be visited in order to obtain the desired quantity. During the "norther season" these places are frequently inaccessible for days in succession. The islands, on the contrary, are favored with many safe and commodious harbors, where vessels can discharge and load at any time without difficulty or delay.

If these islanders would arouse from their lethargy, display a little ambition, and practice only a tithe of the industry which in less favored climes is a necessity among the laboring classes, and if at the same time they would make use of a few modern implements and appliances in the cultivation of their lands, they could easily compete with the coast, and not only retain but greatly augment the trade which is now gradually leaving them. With proper cultivation and development these islands would soon become what nature evidently designed them to be, marvels of wealth and beauty. At present they are not prosperous, but are slowly retrograding, while the future seems to offer no promise of better times.

One cannot fail to remark the contrast in moral and material conditions between the inhabitants of the coast and those of the bay islands. The latter are more civilized. Their dwellings are substantial, neat, and well furnished. They dress in accordance with the latest styles, and maintain a fair standard in good breeding, morality, and religion. In no part of the United States is the Sabbath more strictly respected than in these islands.

The fruit districts of the main, on the contrary, are scandalously demoralized. They remind me of the mining camps of California in the golden years of 1849 and 1850. Money is plenty and easily obtained, but unfortunately it is used to gratify the lowest vices. Drunkenness,

debauchery, and gambling prevail without restraint or limit. Married mothers and legitimate children are rare exceptions to the general rule. A large proportion of the fruit-growers were formerly *vaqueros* (cow-boys) in the interior, working on a salary of from \$25 to \$40 a year. They are now owners of plantations, and have a steady income of from \$30 to \$300 a month. This sudden change of fortune, so far from being a blessing, is a positive curse both to themselves and to the community in which they live.

The Government of Honduras is to a certain extent responsible for this deplorable state of disorder and corruption.

The two principal sources of national revenue are demoralizing in their tendency and effect. The first, excessively high import duties, offers an irresistible temptation for smuggling and illicit traffic, weakens respect for law and order, and injures legitimate commerce. The second, exclusive, indiscriminate, and unrestricted sale of rum by the Government, demoralizes the people and gives official sanction to intemperance, with its long train of attendant evils.

The large amount of money which is constantly being distributed along the coast in exchange for fruit would make any civilized and temperate community prosperous and happy. There would be public and private schools, churches, banks, newspapers, libraries, parks, carriages, and handsome dwellings, supplied with every comfort and luxury and surrounded by gardens of flowers, fruits, and vegetables natural to this climate of perpetual seed time and harvest. But in place of such desirable conditions, which are not only possible, but might easily be realized, what do we see? A collection of hovels, covered with leaves and plastered with mud, dirt floors, no windows, and nothing that merits the name of furniture; men barefooted, dirty, ragged, profane, and vulgar. Their sickly and bloated looks tell of bad living and dissipation. Women, whose style of dress, flashy ornaments, manners, and demeanor plainly indicate their character and mode of life. Children, some quite naked, others half dressed, all dirty and nearly all pot-bellied, with sickly and cadaverous faces. Such are some of the sad effects of sudden prosperity among an ignorant people, where vice is at a premium and morality at a discount. No part of Asia or Africa can offer a more inviting field for the missionary and the philanthropist.

A popular excuse among native statesmen and orators for the demoralized condition of the common people, as well as for the absence of wealth and general prosperity among the better classes is that the country is new and that time will remedy everything. This is a strange delusion. Honduras was discovered and settled a century before the Pilgrims landed at Plymouth. Truxillo is a hundred years older than New York. The site now occupied by the splendid capital of the United States was a wilderness, owned by the red man, when Comayagua was a thriving metropolis. There is not a city or town of importance in Honduras as young as Chicago. It is not the infancy of this country, nor yet political revolutions, which have kept it in the background, with all its natural resources and elements of wealth undeveloped. No country can be prosperous which does not encourage and dignify labor, and especially agriculture. This is a very old axiom—

Far back in the ages the plow with wreaths was crowned;
The hands of kings and sages entwined the chaplet round.

In Honduras manual labor is not respectable. The better class will not work, and look down with contempt upon those who are compelled to do so. There are no agricultural societies, no fairs, no premiums, and no encouragement of any kind for the tillers of the soil.

Many of the educated and thinking men of the country have advanced ideas and theories on political economy and industrial improvements, but they do not even attempt to put them in practice. They are constantly speaking and writing of the immense natural resources of Honduras, without making a single effort to develop them. They expect the country to become suddenly prosperous and wealthy by some mysterious process which does not require physical exertion or fatigue, at least on their part. The young men of good families, who ought to initiate and manage industrial enterprises and give steady employment to the people, are generally drones and sensualists, without ambition except for political patronage. The feeble attempts at agriculture are made by the ignorant plebeians, without the aid of capital, science, system, or intelligence. Only brute force is employed. There are no labor-saving machines or modern implements. An ax, a machete, and, in rare cases, a hoe or a mattock, constitute the working outfit of a Hondurian farmer. The country is overrun by vagrants and vagabonds. The mass of the common people have no property, no steady occupation, and apparently no ambition, except to maintain a useless existence. It is this idle and unsettled element of the population upon which filibusters from abroad and political aspirants at home depend to execute their plans of revolution. The Government maintains a standing army, composed largely of the same lazy vagabonds, to keep the others in subjection. This consumes a portion of the national revenue which ought to be devoted to public schools and other needed improvements. The two great enemies of Honduras are ignorance and laziness. These breed revolutions and impede the march of civilization and prosperity. President Bogran has declared war against the first, and I believe he is able to conquer both. The fruit industry of these islands and the adjacent coast offers constant employment, easy, pleasant, and lucrative, to all of that idle and revolutionary portion of the inhabitants which is now a source of danger, damage, and expense to the republic. National lands are abundant, and are ceded gratis to all actual settlers who will cultivate them.

The laws which regulate agriculture are extremely liberal. The largest and richest as well as the most healthful and inviting section of Honduras is still almost unoccupied except by a few peaceful Indians. It extends from Truxillo to the eastward as far as the boundary of Nicaragua, a distance of 180 miles. It is bordered by the sea, contains navigable rivers and lakes, a fertile soil, extensive pampas covered with nutritious grasses, forests of mahogany and other precious woods, and, finally, all the natural conditions to sustain a population larger than is now contained in all the rest of Honduras. I was governor of that province for several years, and had favorable opportunities to study its features and resources. I believe it is not excelled by any equal portion of tropical America. For fruit-culture it has advantages over many of the localities devoted to that industry in this district.

If the Government of Honduras, instead of begging and waiting for foreign immigration, would muster the able-bodied men of the interior who have no occupation, give each one of them a farm on the coast, and keep them under military discipline until they would produce bananas and other fruits for sale and export, the result could not fail to be satisfactory in many ways. It would make good citizens and patriots of a class which at present is not only non-productive but injurious to the public welfare. It would strengthen the Government, as the same men, having homes and property to defend, would array themselves on the side of law and order. It would initiate the settlement of a new terri-

tory of great possibilities and promise. It would increase the fruit trade and thereby bring more money and more business to the country.

There are other and better classes of people in the interior, who are now doing nothing to improve their conditions, to whom these fruit districts offer the most inviting inducements. There are young men of intelligence and good standing with some capital, and others who have inherited gold and silver buried in the ground for safety.

If such men would invest their means and give their personal attention to the cultivation and commerce of fruit in these islands and the coast, they would make this important industry respectable and attractive, as it ought to be, and as it is in other countries, and at the same time they would give an impulse to the prosperity of Honduras which all the mining and cattle interests of the interior have failed to accomplish.

FRUIT SUPPLIES.

The average annual production in this district of each kind of fruit is—

Bananas	bunches..	2,500,000
Cocoanuts	No....	6,000,000
Plantains	No....	3,500,000
Pineapples	No....	150,000
Oranges	No....	200,000
Limes	barrels..	600
Mangoes	do....	800
Tamarinds	do....	75

In the Bay Islands production has diminished in recent years, and by the present mode of cultivation it cannot be increased. On the main it is rapidly increasing and is capable of great extension.

The trade in bananas, plantains, and pineapples is most active from March to July. The average prices during that period are—for bananas, 62½ cents per bunch; plantains, \$8 per thousand; pineapples, 87½ cents per dozen; mangoes, \$2.50 per barrel; limes, \$3 per barrel; tamarinds, \$3 per barrel; oranges, \$5 per thousand. Fruit is shipped constantly during the entire year, but from July to March the prices are lower, the average for bananas being about 31½ cents per bunch, and for other fruits about 25 per cent. less than the prices above quoted.

The season for cocoanuts is from August to January. They command the highest prices in October and November. The average during the shipping season may be stated at \$25 per thousand, and for the rest of the year at \$18.

These prices are in the silver currency of this country, principally Peruvian sols, a dollar of which is now worth 72 cents in United States money. This depreciation of silver is a serious drawback to trade in this country. The merchant is compelled to receive sols in exchange for his goods. He remits them to New Orleans to be sold and the proceeds placed to his credit. He has to pay 1 per cent. freight without insurance. One thousand dollars (sols) nets him in New Orleans \$712.80 in United States currency, or, in other words, he pays a fraction over 40 per cent. premium for good money. The planter who sells a bunch of bananas for 5 reales (62½ cents), receives in reality but 45 cents, and at the present price of 2 reales (25 cents) he gets but 18 cents, net. Cocoanuts are now selling here at \$20 (sols) per thousand, which means \$14.40 in American currency.

There is a growing disposition among the planters and merchants of this district to "strike" for United States currency.

SPECIAL VARIETIES OF FRUITS.

What are called here "French bananas" are preferred to all others. A few of the red, the fig, and the China varieties are cultivated, but there is not much demand for them.

There are three kinds of pineapples, viz, the sugar loaf, the horse, and the Cherokee. The last-named has been recently introduced and has become a favorite. It is very large, sweet, and juicy. The stalks and leaves have no prickles. The largest pines of this variety will weigh from 8 to 10 pounds. The mangoes, limes, oranges, and other small fruits are natives of the country and have no special names. Grafting and other devices for improving the size and quality of the native fruits are not employed or understood.

The average annual shipments of each kind of fruit and the countries to which shipments are made may be stated thus:

Bananas	bunches ..	1, 875, 000
Plantains	No.	2, 625, 000
Cocoanuts	No.	4, 500, 000
Pineapples	No.	65, 000
Oranges	No.	120, 000
Limes	barrels ..	450
Mangoes	do.	72
Tamarinds	do.	30

The United States is the only market for the fruits exported from this district. New Orleans receives the largest part. From thence they are forwarded in fruit-cars to the North and West. I am assured by reliable authority that the freights carried by the railroads from New Orleans on bananas alone during the past year amounted to over \$200,000, and that the business is steadily increasing.

There are seven regular steamships constantly employed in the fruit-trade between this district and New Orleans. These vessels have an aggregate carrying capacity of 100,000 bunches of bananas, 250,000 cocoanuts, 175,000 plantains, besides an assortment of pineapples, oranges, &c. They can make two round trips a month, but probably, owing to detentions, they do not average over ten annually.

There are also two steamships from New York which call here regularly for cocoanuts. Besides the steamers there are some ten or twelve schooners engaged in carrying fruit from this district to New Orleans, Mobile, and Key West.

Probably not more than two-thirds of the bananas and only about one-half of the cocoanuts, plantains, and other fruits produced here are shipped for export. The banana is subject to a variety of accidents and contingencies. The "northers" blow down a large number of trees every year, and sometimes prostrate whole plantations in exposed localities. During the dull season when the price is lowest, as it is now, many planters who have to carry their fruit a long distance will leave it to rot in the plantations, as they claim that the cost of delivering to the vessels allows them no profit. A large percentage of the fruit brought alongside of the vessels is rejected by the inspectors, who are always appointed and paid by the buyers.

All bunches of bananas which are considered by these judges to be too thin, too full, too small, or which have been bruised in handling are rejected and generally thrown into the sea. They also practice "doubling," two and three bunches being often counted for one. A great deal of cheating is practiced in the present system of fruit inspection, causing constant complaints and frequent quarrels. It ought to be regulated by law, and the inspectors appointed by the Government.

PROSPECTS OF THE FRUIT TRADE.

Two American companies, with liberal grants and concessions from the Government of Honduras, are preparing to commence important improvements in this district. One proposes to establish a railroad between Truxillo and Puerto Cortes, passing through all the fruit districts of the mainland, giving the planters an opportunity of forwarding their produce to either of those ports, and of avoiding the delays, danger, and losses now experienced by shipping in open roadsteads. Messrs. McConico and Stearns, the former representing the Illinois Central Railroad Company and the latter some capitalists of Wall street, are now on the coast making surveys and estimates for reports to their respective constituents. The plan of the other company is to connect the port of Truxillo with the river Aguan by opening and improving a canal which nature has already provided. This would render the rich and extensive bottom lands of that river available for fruit culture. Both of these projects are considered practicable, and the accomplishment of either would be highly advantageous to the country, and especially to the fruit trade.

Honduras no longer enjoys a monopoly of the fruit markets of Central America. Rival and competing districts have recently grown up on all sides. Belize, Guatemala, Nicaragua, the Mosquito Reservation, and Costa Rica are all exporting fruits to the United States, and their respective Governments are giving to this new industry their special attention and encouragement. In view of this rivalry and of the fact that fruit is the life of trade and brings more money into general circulation than all of the other interests of the country combined, it is a matter of surprise that this Government should continue to treat this vital industry with so much apathy and neglect.

The following are the principal drawbacks to the fruit trade, viz :

- (1) Depreciated currency.
- (2) Want of good faith on the part of both shippers and planters.
- (3) Want of system and order in the handling and shipping of fruit.
- (4) Scarcity of labor.
- (5) Unnecessary delays of fruit vessels by the custom-house officials, and a superabundance of red tape.
- (6) Political disturbances which take laborers from the plantations for the military service.

The following are names of the principal places which produce fruit for export in this consular district :

In the Bay Islands.—Ruatan, port of entry and good harbor; Utila, port of entry and good harbor; Bonacca, *puerto minor*, good harbor; Man-of-War-Cay, good harbor; Barbarat, good harbor; Helene, good harbor; Murat, good harbor; Oak Ridge, good harbor; French Harbor, good harbor; Jonesville, good harbor; Calabash Bight, good harbor.

On the mainland.—Truxillo, port of entry; Bamboo Creek, open roadstead; Stephen's River, open roadstead; Belfate, open roadstead; Ramirez, open roadstead; Sancho Creek, open roadstead; Piedra Pintada, open roadstead; Congrehoy, open roadstead; Ceiba, open roadstead; Danto, open roadstead; Bonito, open roadstead; Rio de Cueros, open roadstead; Rio Colorado, open roadstead; Tela, open roadstead; Puerto Sal, open roadstead; Puerto Cortez, port of entry; Cienequita: Omoa, good harbor.

Some of the places above mentioned are not visited by steamers, but small sloops and schooners are employed to collect and deliver the fruit to them.

WM. C. BURCHARD,
Consul.

UNITED STATES CONSULATE,
Ruatan and Truxillo, July 31, 1886.

CLOCK-MAKING IN THE BLACK FOREST.

REPORT OF CONSUL BALLOW, OF KEHL.

There is scarcely a city in Germany or in Europe, perhaps outside the limits of this continent, where one cannot find clocks from the Black Forest. It is rarely the case that a branch of industry becomes so extended as the above mentioned, and the Black Forest clocks have become typical for the description of the idea conveying the comfort and snugness of a South German home.

Owing to the barrenness of the soil and the custom in the Black Forest region, that farms belonging to a father's estate can only revert to the eldest son, the other children of the family, who were and are still, as a general thing, numerous, were obliged either to emigrate or to engage in mechanical labor of some kind, which was made easy and profitable owing to the magnificent forests furnishing the necessary wood.

As is shown by reliable data the manufacturing of wooden ware, such as turners' and coopers' articles, was carried on largely in the time of the Emperor Rodolphus of Hapsburg. Afterwards the making of tin spoons, brushes, and other wares began. Towards the end of the seventeenth century farmers who could not maintain their families from the products of their farms began to engage in clock-making. Poor cottagers without property, but with inventive genius, and dependent upon the labor of their hands, became the patriarchs of clock-making. Their sons and their apprentices introduced this industry in the districts where it is to-day a flourishing business. The case and movement of these clocks were made with tools of the very plainest description, such as a pair of compasses, a little scroll saw, augers, and a knife. These wooden clocks proved to be a fortunate invention; they found a good sale, and awakened the artistic talent of their inventors. The art of clock-making was still the monopoly of the patriarchs, their sons, and grandsons, but the inventive genius that is inherent to the inhabitants of the Black Forest, united the different experiences gathered in various workshops and made use of them, so that the local extent of this clock industry became largely increased.

In the middle of the last century clock-making in the Black Forest was already carried on in all the localities where it now exists. The construction of such a wooden clock with heavy weights was very plain. It consisted of three wheels only, a vertical swing wheel put into motion, a balance resembling a yoke, to which were attached several leaden weights in order to regulate the movement of the clock. This construction was, however, abandoned in 1740. It was supplanted by the pendulum clock. At first the pendulum was placed before the dial, afterwards a longer pendulum was arranged behind the movement. All these clocks had to be wound up every twenty-four hours. Some of

them were made to strike every quarter of an hour; clocks with automatic figures, such as peasants, soldiers that sounded a signal at the end of every hour, &c.; also clocks that recorded the months and days as well as the hours.

About the year 1750 they adopted movements made of wire instead of wood; afterwards metallic wheels were introduced. Since the year 1750 they manufactured very neat, little carved clocks with weights, which were called "Jockele-Uhren," from their inventor, Jacob Herbstreit. At the beginning of this century clock-making had become quite extensive and brought large profits to manufacturers. From 1830 to 1850, however, this industry did not prosper, owing to the stubborn preservation of old shapes and the manufacturing of clocks of inferior quality. With a view of stopping this decline a technical school for clock-makers was founded at Furtwangen, the center of the clock industry, in 1850, under the direction of Mr. Gerwig, who afterwards became one of the builders of the St. Gothard Railroad. Its purpose was to educate persons in the making of clocks, and to have this industry keep up with the times and progress manifested in other countries, and also to introduce the manufacture of watches.

The latter project had to be abandoned owing to foreign competition, but in other respects the influence of the school was soon felt, for since that time they make better and finer clocks, which answer more the requirements of artistic taste. After a twelve years' existence, when the task of the school was considered to be accomplished, it was dissolved; however, professional schools were founded in the principal localities of the Black Forest, in order to give the necessary technical knowledge to apprentices.

Prominent manufacturers also organize exhibitions showing the condition of clock-making, and the progress made therein. Although modern, fine clocks are principally made, there are still establishments which produce the traditional old-fashioned clocks, such as they made 150 years ago, with the primitive wheels and the plain wooden dial. This is less due to the adherence of the Black Forest inhabitants to old tradition than to the fact that these clocks are still largely sought for on account of their durability. At one time the maker made everything that belonged to a wooden clock. But soon the increase of sales rendered a division of work necessary. No sooner did the clock-makers see that their products went off rapidly than they left to others the preparation of those parts which required more care than art. This was the first step towards that astonishing development of this industry, because it gave time and leisure to the artist to entirely apply his talent to new inventions and improvements.

Owing to the increasing demand it became necessary to divide the various branches of the clock industry, but the latter retained nevertheless the character of a house industry, because the workmen are not employed in factories; they are small farmers having an acre or two of land with some cattle, and their spare time is devoted to making parts of clocks. This system will undoubtedly remain, owing to the peculiarities of the Black Forest and the character of its inhabitants. The division of labor for a Black Forest clock is as follows:

- (1) The wood-cutter, preparing the wood of beech trees for the case;
- (2) the case-maker; (3) the maker of the plate (shield); (4) the painter;
- (5) the founder of the bell and wheels; (6) the chain-maker; (7) the spring-maker; (8) the carver; (9) the dial-maker; (10) the decorator of the case, and (11) the maker of the primitive movement.

In the Black Forest there are 92 communities engaged in this industry, with 1,429 independent clock-makers, giving employment to 7,526 operatives. In 1796 these workshops turned out 75,000 clocks; in 1808, 200,000, and in 1880 the total production was 1,800,000 clocks. In the city of Furtwangen were manufactured over 400,000 of these.

The first clock-makers only made a few clocks for the surrounding farms. The favor these clocks met with determined some dealers in glassware and straw hats to take them among their articles. The net profit they realized was so considerable that it excited the envy of the clockmakers, who upon that experience sent the clocks on their own account to the neighboring large cities in Brisgovia and Suabia. They gradually extended their trade, and divided the markets in the different provinces of Germany among each other; some of them even traveled to Asia and Africa. The Black Forest clocks are sent to all points of our globe.

Germany takes all kinds of clocks, from the finest regulators to the plainest wooden clock.

Austria buys only cheap articles, such as chain-work clocks. The high entrance duties are an impediment to the trade.

Switzerland has a predilection for trumpeter and cuckoo clocks for the use of strangers, and drag-spring clocks for the native population.

England takes trumpeter and cuckoo clocks, and regulators. Some years ago there was a good demand for cheap clocks with weights, but this has materially decreased, owing to the sharp competition from American manufacturers.

France bought no clocks for several years immediately after the war. At present they buy many carved clocks, called "Schottuhren."

Belgium and Holland require wooden clocks with bronze frames.

Russia imports a large number of carved regulators, also light day-clocks in polished cases, to be used on Russian farms.

Turkey desires mostly cuckoo-clocks, with paintings.

Spain and Portugal buy bronze-framed, carved clocks, with weights.

The United States takes trumpeter and cuckoo clocks with painted dials; also many regulators and musical clocks.

The exportation of these clocks to the United States is steady, and will aggregate \$50,000 per year. During the summer months the Schwarzwald clock region is visited by many Americans, and nearly every visitor purchases one of these clocks. They are very attractive and appear to be cheap, but in many cases they are made to be sold only, and an attractive exterior may induce many to purchase an almost worthless article.

One cannot be too particular when purchasing one of these clocks, for when the cuckoo will not coo any more and the trumpeter will not blow another blast, then is their value as curiosities gone, and when, after a few months, they become valueless as time-keepers, then are they very poor stock indeed. I have heard so many complaints from people who have purchased these clocks in regard to their general poor quality, that I deem it my duty to make this fact public, and also to inform would-be purchasers that, if they wish to avoid disappointment, they should be very particular where and of whom they purchase, and in no case to purchase of irresponsible parties. A few inquiries will generally disclose the required facts.

FRANK W. BALLOW,
Consul.

UNITED STATES CONSULATE,
Kehl, Germany, April 30, 1886.

NOTES.

Increase of duties in Guatemala.—Minister Henry C. Hall transmits, under date August 5, the following decree of the Legislative Assembly of Guatemala:

By the Legislative Assembly of the Republic of Guatemala:

Whereas it is necessary to procure an increase of the fiscal revenues, so that it may be possible to meet the expenses of the Government, the payment of the arrears of the civil list, and the amortization of the public debt; and

Whereas the creation of new revenues at this time has become difficult, and would not give the immediate desired result, for the reason that there are but few articles not already heavily taxed; and

Whereas of the imports already established that of maritime customs can support a small increase, which will be fully compensated by other concessions to commerce and by the increased value of the stocks in store: Therefore,

Be it decreed that from the 1st of October of the present year, all merchandise existing in the custom-houses and which shall be imported thereafter shall pay 15 per cent. additional to the established duties, to be estimated upon the appraisements and to be paid upon the same terms the maritime customs are now paid.

Let it be passed to the executive for publication and compliance.

Given in the Hall of Sessions, Guatemala, July 28, 1886.

Railways and debt of Nicaragua.—The following is a statement of the proceeds of the Railroad of Nicaragua:

WESTERN DIVISION, 60 MILES.

Months.	Expenses.	Net product.	Total.
1884-'85.			
November.....	\$5,570 08	\$7,684 12	\$18,254 20
December.....	4,821 55	6,558 93	11,380 48
January.....	5,344 86	6,545 42	11,890 28
February.....	5,435 66	7,252 70	12,688 36
March.....	4,855 43	7,252 85	12,108 28
April.....	4,822 00	6,076 36	10,898 36
May.....	5,119 70	9,523 60	14,643 30
June.....	4,728 69	10,219 23	14,943 12
July.....	5,169 86	4,227 08	9,396 89
August.....	5,090 22	3,640 27	8,730 49
September.....	5,072 09	3,422 04	8,494 13
October.....	5,695 56	5,985 13	11,080 69
Total.....	61,120 90	78,337 68	139,458 58
1885-'86.			
November.....	4,833 57	6,885 29	11,218 86
December.....	5,105 01	5,911 49	11,016 50
January.....	4,517 11	5,921 50	10,438 61
Total.....	14,455 69	18,218 28	32,673 97

EASTERN DIVISION, 20 MILES.

1885-'86.			
November.....	\$844 30	\$1,201 38	.....
December.....	1,044 65	976 59	.....
January.....	1,387 15	497 77	.....
Total.....	3,276 10	2,675 74	.....
April.....	564 30	846 49	\$1,410 79
May.....	909 10	1,397 44	2,306 54
June.....	825 25	1,709 20	2,534 45
July.....	872 39	1,440 13	2,352 52
August.....	948 03	1,186 90	2,184 93
September.....	875 61	1,799 36	2,674 97
October.....	978 23	1,557 68	2,535 86
Total.....	5,972 91	9,977 15	.....

* In the statement for January no charge for passenger^{rs} and freight on account of the Government.
 † The eastern section is not finished; will be the most productive part. ♡

SUMMARY.

Items.	Expenses.	Net product.	Total.
Western division in 15 months.....	\$75,576 59	\$84,827 11	\$180,408 70
Proceeds from passengers and freight for account of the Government.....		11,728 85	11,728 85
Total.....	75,576 59	96,555 96	172,182 55
Eastern division in 10 months.....	2,249 01	11,821 79	20,570 80
Proceeds from passengers and freight for account of the Government.....		1,331 10	1,331 10
Total.....	2,249 01	12,652 89	21,901 99
Western division:			
Average per month.....	5,038 48	6,437 06	11,475 49
Average per mile.....	83 97	107 29	191 26
Eastern division:			
Average per month.....	924 90	1,265 20	2,190 19
Average per mile.....	46 25	63 26	109 51

Statement of the debt of the Republic of Nicaragua.

Interior debt.....	\$343,000 00
Balance of consolidated bonds.....	14,947 07
Paper money in circulation.....	446,966 90
National bonds payable in custom-house duties.....	95,403 65
Railroad bonds in the hands of Mr. H. D. B. Norris.....	236,264 12
Further railroad bonds, which will be delivered to Mr. Norris next month, as soon as the railroad is finished from Masaya to Granada..	55,900 00
Current account which the Government is owing abroad, in gold.....	\$63,457 95
Add 25 per cent. premium on gold.....	15,864 48
Total.....	1,271,704 17

NOTE.—The sum total of \$1,271,704.17 to be understood in Peruvian soles, which is the currency of the country.

CHAS. H. WILLS,

MANAGUA, May 20, 1886.

Consul.

Declared exports from certain consular districts in Germany.—The following is a statement showing total values of declared exports from the consular districts within the jurisdiction of the consulate-general, Berlin, German Empire, to the United States, during the quarters and half years ending June 30, 1885 and 1886:

Consular district.	Total for quarter ending June 30—	
	1885.	1886.
Annaberg.....	\$286,507 00	\$430,031 00
Bremen.....	631,614 17	747,530 63
Breslau.....	858,845 76	890,888 26
Berlin.....	1,051,692 86	1,523,255 74
Braunschweig.....	703,798 97	1,299,152 33
Chemnitz.....	1,898,781 58	1,915,036 11
Dresden.....	218,011 38	882,572 78
Hamburg.....	1,062,402 27	2,282,949 74
Leipzig.....	638,784 98	885,776 18
Stettin.....	344,899 42	471,224 02
Grand total.....	6,684,338 32	10,321,896 99
Increase in second quarter, 1886.....		3,637,358 67
Total for quarter ending March 31, 1886.....		11,248,318 49
Total for quarter ending March 31, 1885.....		8,678,077 09
Increase in first quarter, 1886.....		2,570,240 89
Total increase for the six months ending June 30, 1886.....		6,207,799 56

BERLIN, August 9, 1886.

F. RAINE,
Consul General.

Crops of Austria.—Consul-General Jussen reports, under date of July 26, 1886, that the condition of crops in Austria on or about July 15 was as follows:

The harvesting of rye began in northern regions of the Empire on the 15th instant; in the middle regions the harvest of rye was almost over, but less than one-half of the crops had been stacked. Complaints of the poor quality of rye straw are frequent, but the reports about the quality of the kernel are on the whole more satisfactory. Although a close estimate is as yet quite impossible, the final result will probably be between a "good middle" and a "weak middling" yield.

Wheat, the harvesting of which has just commenced in the southern and middle regions, shows frequent traces of rust, but promises nevertheless a tolerably satisfactory yield as to both quantity and quality. In Silesia, however, the *Chlorops tenuipus* has attacked about 89 per cent. of the wheat, and injured it to such an extent that a very poor yield is expected.

Barley will yield only a middle crop on an average; it is full of weeds and has suffered greatly by incessant rains. The quality will doubtless be of an inferior grade.

Oats, with a few exceptions, promise a good yield.

Corn has improved. The reports from East Galicia, Bohemia, Styria, and German South Tyrol are satisfactory.

Potatoes are more or less affected by rot.

Sugar beets have suffered in consequence of incessant rains, and in Galicia they have been injured by insects, and reports from that region are not satisfactory.

The harvesting of hay has been completed, and the yield is in certain localities good, in others very poor. On an average the crop was only middling.

The harvesting of rape is as yet not completed in Galicia and in many localities of Bohemia. In Bohemia and Silesia a yield less than middling is expected, while in Galicia and Bukowina the crop will probably be middling good.

Hope have been injured by the frequent rains, and the reports are less favorable than at the end of June. Complaints about leaf-lice are accumulating, and in places the leaves are turning black.

Grapes are reported to be in fine condition in Lower Austria and German Tyrol, but in Styria the phylloxera has made its appearance, and in the region of Trieste the peronospera. The prospects of the grape crop in Dalmatia are most excellent.

Fruit will yield a tolerably good crop in most of the provinces, but with reference to "kernel fruit" the prospects are poor, except in German South Tyrol and Istria.

Foreigners in Guatemala.—Minister Henry C. Hall transmits to the Department the following circular, issued by the Guatemalan Government:

DEPARTMENT OF FOREIGN RELATIONS,
Guatemala, July 29, 1886.

To the Political Governor of ———:

The President, desirous of avoiding difficulties of all kinds in the different branches of public administration, and that the spirit of justice and progress that inspires the Government shall be reflected in each one and all of the departments of the Republic, has instructed me to address you upon the important subject of the conduct to be observed by the authorities towards foreigners.

The Executive is impressed with the necessity of favoring an honest and industrious immigration, and cordially accepts the principle of equality of civil rights, for nations and foreigners, established by modern civilization, and he earnestly desires that foreigners shall find in Guatemalan territory perfect security; that their agricultural and industrial enterprises shall receive the most ample protection that the authorities, within the limits of their powers and of republican equality, can afford them, and that they shall be protected against violence and abuse. The President so directs because justice demands it, and because it is essential to our progress, and, in fine, because an enlightened world, in whose good opinion the Republic would suffer were it otherwise, demands it of us.

With this object I remind you that although foreigners from the moment they enter the territory of the Republic are obliged to respect the authorities, to obey the civil and penal laws and the police regulations, to pay local imposts and the established taxes upon commerce, industry, professions, property, and estates, are also, on the other hand, from that moment entitled and can appeal to the protection of the same laws and the authorities.

Care must be taken also that the guarantees of the constitution and of the laws under which they are vouchsafed to Guatemalans shall be extended to foreigners; that prompt and exact justice shall be rendered them in all matters in which they are interested; that the administrative authorities shall not exact of them anything not in conformity with the laws; that they shall not be required to discharge municipal

duties or to render military service, or to work upon the highways, their obligation in this matter being the payment of the respective tax, and this only is to be required of them. In a word, care is to be taken that in no instance shall any just cause of complaint be given.

Although in all else foreigners, with the exception of diplomatic agents, are not to be granted considerations not recognized by the laws, neither are exceptions to be established against them and against the objects towards which all civilized communities tend.

Whenever there may be any doubt, or should any case occur from which difficulties may arise, you will inform this Department immediately by telegraph, in order that opportune instructions may be given and ulterior consequences prevented. You will also remit copies of this circular to the commissioners of the towns and to other authorities of your dependency, to the end that they may bear in mind, observe, and cause to be observed, faithfully, these instructions so that there may be no cause for reclamation or for conflict. Confiding in your zeal to aid the Government in the sense above expressed,

I am, your obedient servant,

FERNANDO CRUZ.

Petroleum wells of Java and Sumatra.—Minister Isaac Bell, jr., writes from the Hague, under date of August 18, 1886:

I have learned from sources which may be considered as authoritative that the recent surveys in the islands of Java and Sumatra have brought to light the existence of petroleum wells of apparent considerable value. In order to fully explore and ascertain the approved system of working them, the minister of the colonies has commissioned Mr. A. Stoop, an officer of engineers, to visit the United States to thoroughly study the methods employed there for such work.

Woolen trade of Belgium.—The following are comparative tables of exports and imports of woolen goods from and into Belgium during the first six months of the years 1886, 1885, and 1884:

WOOLEN YARN.

Period.	Importations.			Exportations.		
	1886.	1885.	1884.	1886.	1885.	1884.
	<i>Kilos.</i>	<i>Kilos.</i>	<i>Kilos.</i>	<i>Kilos.</i>	<i>Kilos.</i>	<i>Kilos.</i>
Month of June.....	68,880	81,590	67,060	990,610	990,060	849,060
Six first months.....	348,890	434,290	366,890	4,445,450	4,490,820	4,415,370
Entire year.....	.....	979,920	832,400	.....	9,204,290	8,911,290

CLOTHS, CASHMERES, AND SIMILAR GOODS.

	<i>Francs.</i>	<i>Francs.</i>	<i>Francs.</i>	<i>Kilos.</i>	<i>Kilos.</i>	<i>Kilos.</i>
Month of June.....	167,110	129,720	137,980	147,730	100,470	123,410
Six first months.....	1,579,430	1,880,920	1,453,660	685,780	629,270	668,520
Entire year.....	.....	3,002,660	2,798,880	.....	1,440,000	1,382,190

COATINGS, DUFFELS, AND OTHER HEAVY TISSUES.

Month of June.....	129,460	160,850	178,250	20,090	12,950	19,870
Six first months.....	673,200	607,290	1,165,510	95,430	72,460	105,250
Entire year.....	.....	1,899,190	2,484,900	.....	214,900	223,300

LIGHT-WEIGHT TISSUES.

Month of June.....	870,140	1,047,530	907,260	33,150	64,260	29,040
Six first months.....	7,326,820	9,055,860	7,985,070	267,560	453,310	254,570
Entire year.....	.....	17,087,060	15,741,400	.....	895,710	698,500

G. D. ROBERTSON,
Consul.

UNITED STATES CONSULATE,
Liege, Belgium, August 18, 1886.

Trade of Port Said.—The following imports were received at Port Said during the year 1885:

Petroleum from United States	cases..	106, 072
Coal from Cardiff	tons..	685, 251
Coal	do..	95, 459

The following were exports from Port Said during the year 1885:

Oriental goods to United States	£800
Oriental goods to India	600
Oriental goods to Australia	500
Old iron to Italy	tons.. 5, 000
Cotton to Odessa	bales.. 13, 500
Cotton seed to London	bags.. 4, 000

R. BROADBENT,
Consular Agent.

PORT SAID, *July 19, 1886.*

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5. 3
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